ADDRESSES D ORIGINAL ARTICLES

A STUDY OF PNEUMOCOCCAL PNEUMONIA

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This paper is based on observations made on 184 atients suffering from pneumonia and treated at the ammersmith Hospital (London County Council) etween February, 1932, and April, 1933. They were ivestigated from the clinical, radiological, and boratory aspects. In addition, the records of the iddlesex and Royal Free Hospitals over a period of n years have been examined.

The Mortality of Pneumonia

In 1907 the first meeting of the newly formed ction of medicine of the Royal Society of Medicine[1] as devoted to a discussion on pneumonia. Statistics ere obtained from ten of the leading London hospitals r the years 1897–1906 inclusive, and the 6735 case-cords available gave a mortality of 23 per cent. owan and Harrington[2] analysed the records of the lasgow Royal Infirmary over a similar period (1920–9) and found a mortality of 21·5 per cent. in 1415 ases; it fluctuated from year to year between 16·2 nd 27·3 per cent. Armstrong[3] studied 706 cases dmitted to St. Bartholomew's Hospital during the ears 1925–29 and reported a mortality of 16·6 per ent. A more recent survey from Birmingham by oules[4] of 496 cases of "primary pneumonia" howed that 25·6 per cent. were fatal.

Finally the records of the Middlesex and the oyal Free Hospitals have been analysed for the eriod 1922–31, and if children below ten years of ge are excluded, the mortality is 19 per cent. for 59 cases.

In the United States pneumonia seems to be more atal, although Cecil of New York maintains that he death-rate has been "distinctly lower since 1919." n Cecil's Bellevue Hospital series[5] of 1849 cases there as a mortality of 33·9 per cent., and other American ecords support the impression that the disease is elatively severe in that country.

All statistics show clearly that mortality increases ith age. This was evident in the Royal Society f Medicine series of 1897–1906 and is apparent also in series from the Middlesex and Royal Free Hospitals, 922–31 (Table I.). In both groups there is a decided ncrease in mortality with age, but the series of 1922–31 show an appreciable reduction especially in the age group 20–40.

The 1922–31 series yield further information. If none but the cases which fall between ten and fifty years are included, a total of 542 is obtained, and of these 70 died—a percentage of only 13. With still further selection, limiting the survey to those between ten and forty (a total of 418 cases, with 36 deaths) the mortality is 8·6 per cent. In Joules's series, which were cases largely drawn from the "very poor," the mortality in the 10–40 age-group was 12·5 per cent.

TABLE I.—*Percentage Death-rate in relation to Age*

Period.	Cases with mortality per cent.	Age-group.					
		10–20	20–30	30–40	40–50	50–60	60
1897–1905	682 (24·3) (Roy. Soc. Med.)	5·2	14·2	34·3	39·3	46·6	68·6
1922–1931	859 (19) (Middlesex and Royal Free)	6·0	6·0	18·0	27·[illegible]	42·0	63·0

In a modern investigation the mortality figures must be correlated not only with age but also with type. Cecil, Baldwin, and Larsen[6] showed that Type I. pneumonia was most common under forty years of age. Of 1092 cases of pneumonia under forty, no less than 426 (40 per cent.) were due to Type I.; over that age out of 795 cases only 202 (25 per cent.) were due to this type. There is therefore a high incidence of Type I. infection under forty, and this is the period of better prognosis. Blake[7] made a similar study and found a still higher proportion in his cases: under thirty-nine years 80 per cent. were due to Type I., whilst over forty the incidence fell to 20 per cent.

If we are to regard Type I. pneumococcal pneumonia as being the commonest form to attack those under forty years of age, then the period of life most favourable for spontaneous recovery corresponds to the incidence of the type most amenable to serum therapy. It may therefore be difficult to determine in a serum-treated case what factor saves life. In the series here described we therefore selected the more serious cases for specific treatment (instead of alternat rs cases) as affording a more stringent test of the valup. of serum.

Type I. Pneumococcal Pneumonia

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Evidence is accumulating that the three spetion;
types of pneumococcal infection can often be re
nised clinically as well as bacteriologically. Ty
conforms most closely to the classical descript 'AYS
pneumonia. It attacks the young and appf these
healthy; it is ushered in by pain of suddene third,
vomiting, or a rigor; it shows a high and s
fever, and it commonly ends with a crisis
by rapid resolution.

day, all of
d or fourth

INCIDENCE

It is important to realise the high inc 1 the fifth.
Type I. infection. In 4310 cases reported b respiratory
Plummer[8] it was responsible for 32·1 per c d day
in his monograph gave it an incidence of 33
and Park and his colleagues[10] in 1928 pr
at 28·5 per cent. Other findings are tho
32 per cent. of 606 cases; Leys[11] 32 out
Dible,[12] 34·4 per cent. of 766 cases; and
in Glasgow, 36·2 per cent. of 1215 cases.
Research Council report[14] of the com
of Aberdeen, Glasgow, Edinburgh,
showed an incidence of 35 per cent
While individual reports suggest va
to year and from country to countrat after an initial
established, both from recent any for some hours.
O ted less than those

its of erum.	Serum sick-ness.
80,000	0
80,000	0
120,000	+
90,000	+
100,000	0

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*Parts II. and III. will appear in forthcoming issues of THE LANCET.

Ameri .. .nd British workers, that Type I. accounts for so.ne 30 per cent. of all cases of pneumonia.

During the period February, 1932, to April, 1933, we had 184 cases of lobar pneumonia under observation, and of these, 137 showed a type incidence as follows:—

Type I.	55 cases	(40·0 per cent.)
Type II.	13 ,,	(9·5 ,,)
Type III.	20 ,,	(15·0 ,,)
Group IV.	49 ,,	(36·0 ,,)

In addition there were—

Two types	12 cases.
Streptococcal	4 ,,
Untyped	31 ,,

Incidence in relation to age.—Of 1380 cases of Type I. pneumonia studied by Cecil,[8] 806 (59 per cent.) were in persons between ten and forty years of age—broadly speaking, in young adults. Of the 194 Type I. cases recorded by Blake[7] 80 per cent. were in persons below forty. In the Medical Research Council's combined statistics[14] of 485 Type I. infections, 364 of the patients were between twenty and forty, an incidence of over 70 per cent., while only 121 were between forty and sixty. Apparently it is uncommon to find Type I. pneumococcus in the pneumonia of the very young, and Cecil[8] regards it as an extremely rare infection under the age of three. Our group of 55 Type I. cases agreed in showing a preponderance of patients under forty:—

Years.	Cases.
10–19	11
20–29	16
30–39	11
40–49	9
50–59	5
60	0

There is therefore good evidence to regard Type I. pneumonia as an infection which predominantly affects the young adult. This in its turn carries with it a good prognosis.

MORTALITY

It is necessary to have some estimate of the mortality of this form of pneumonia in the absence of special treatment, and if possible to know the ›xpected mortality in relation to age. Since it is form predominantly attacking the young and healthy, would not be difficult to compile a large series with very low mortality, and this must be borne in mind en assessing the value of any specific remedy. as been clearly shown that Type I. pneumonia is ore dangerous disease in America than it is in and, but this conclusion has to be qualified by ıct that our compiled statistics are less extensive. ıath-rate in America *is given as* 25–30 *per cent.*, en there it varies according to the class from the *different institutions* draw their cases. ves a mortality of 28·2 per cent. at Bellevue Lord[15] 24·7 per cent., Blake[7] 23·2 per cent., 29 per cent., and Sutliff and Finland[17] ;ent.

;aldwin, and Larsen[6] found the mortality of 'ection in relation to age to be:—

8·4 % deaths.	40–50.. ..	21·0 % deaths.
16·0 % ,,	50–60.. ..	26·6 % ,,
17·8 % ,,	60	31·2 % ,,

y school[18] found in a series of 1118 e death-rate for Type I. pneumonia was ent. Langley,[19] however, in Manchester aths in 99 cases—a mortality of 20 per ıbined total of the Medical Research (301 untreated cases) showed a er cent.

·ies of 55 cases of Type I. pneumonia es deemed serious enough to have serum treatment, and the remaining 36 all recov without the aid of any specific therapy. Since we know that the mortality from all types of pneumonia is lower in this country than in America, we deduce that the *mortality here from Type I.* pneumonia cannot on the whole be much greater than 10–15 per cent.

CLINICAL PICTURE OF UNTREATED TYPE I. PNEUMONIA

As just stated, there were 36 *patients who had no* treatment and they all recovered. The average age for the group was *thirty*: 23 *terminated by crisis* and 14 of these showed a normal temperature on or before the seventh day, while 21 were afebrile before or on the ninth day. Like other observers, we have found a sustained temperature with a swing of about 2° in the majority; the range was usually from 102°–104°. The younger the patient the higher the temperature. The infection, if judged by the respiratory rate, was moderately severe; for in 31 the respiratory rate was above 30 and in 16 was 40 or more. Thirty of the cases showed a pulse-rate above 120. The pulse-rate rapidly returned to normal after the crisis. In assessing any form of treatment it is imperative to know the stage of the pneumonia *at which the case is first seen. In this* group it was possible to ascertain the exact date of onset in 28 cases—the pneumonic onset being sudden and ushered in by such dramatic symptoms as rigor, vomiting, or sudden pain. In eight of the cases there were some *atypical features* and the exact day of onset somewhat doubtful.

Only 4 of this group gave a past history of chronic chest trouble; their course was far more distressing than that of others with a clear history.

Typical signs of consolidation were obtained on admission in 24 cases, atypical signs in 9, and no signs at all in 3, though these had become definite 24 hours after admission. Extension into another lobe was observed in 6 of the more serious cases. A feature common to almost all this group was the rapidity with which the signs of *consolidation* disappeared; for in 27 of the 36 cases no physical signs were elicited *after* the twenty-first day. In only 2 was there a delayed resolution. Empyema developed in 3 of the cases; this was treated by aspiration in 2 and by rib resection in the other.

Type I. pneumonia has been regarded as the pneumonia of the "healthy" young adult. It is the form which shows all the classical features of "acute lobar" pneumonia—the high sustained fever (Chart 1), the clear-cut onset, and, in a large majority, the sudden cessation of distress with a sharp crisis. Our group of 36 is in keeping in several respects, the youth of the patients (average age thirty), the infrequent past chest history, the comparatively common "early" crisis (Chart 2), and the absence of *any profound or progressive toxæmia in the majority.* (In an older person the response is less typical.) Favourable and unfavourable features of this type may be classed as:—

Favourable.—(1) High sustained fever. (2) Early crisis. (3) Rapid fall in pulse-rate with cessation of fever. (4) A good initial leucocytosis (20,000–30,000) and a rapid fall in white cells associated with the crisis. (5) No history of chest trouble.

Unfavourable.—(1) An irregular fever. (2) Cyanosis and profound toxæmia. (3) A persistent tachycardia. (4) A persistent high white cell count, or an initial or persistent low white cell count. (5) A persistent bacteræmia. (6) Preceding chronic chest history or existing hypertension.

Seeing that Type I. pneumonia is the form in which serum therapy has been proved useful, it is well to bear in mind the probable benign course in a large proportion of the cases, the not infrequent early crisis and the youth of the average patient.

LABORATORY FINDINGS IN UNTREATED TYPE I. PNEUMONIA

Leucocyte count.—The average leucocyte count, taken at the height of the fever in our untreated Type I. cases, has been 22,000. The general trend has been for the count to fall to 12,000 within three days of the crisis and to 10,000 within the week. In two cases of empyema the same subsidence occurred after the crisis, but with the establishment of the empyema the rise was only to 18,000 and 10,000 respectively.

Blood culture.—In 22 untreated cases blood cultures taken on the day of admission were all negative. Owing to the favourable course of the disease the examinations were not repeated.

Agglutinins.—In our series of untreated Type I. pneumonias we have been impressed with the ease with which agglutinins are developed in the blood and their transitory nature in uncomplicated cases. The most constant finding in straightforward Type I. infections has been for agglutinins to be detectable not just before or at the crisis but about two or three days afterwards; usually they have disappeared after a fortnight. This phenomenon was observed in 14 cases out of 22. On the other hand, cases which developed complications, such as empyema, extension of consolidation, otitis media, or delay in resolution, have almost all shown a persistence of agglutinins beyond the time stated above. With the onset of a complication the agglutinins sometimes disappear, to reappear when the complication has subsided.

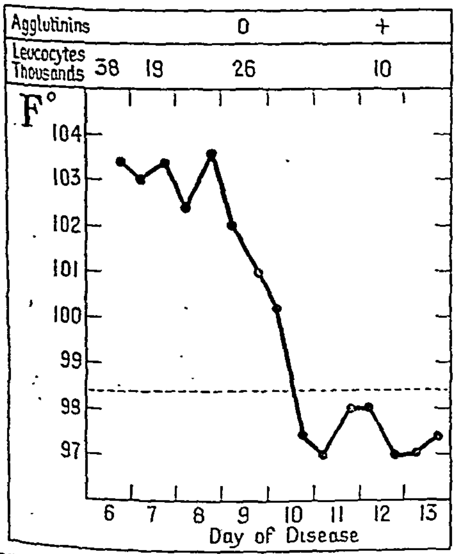

CHART 1.—Type I. pneumonia in a male aged 30. Rapid fall in white cells from 38,000 to 10,000 in seven days. Rapid resolution.

We deduce therefore that agglutinins are substances associated with the process of resolution; their presence, though favourable, is no index of true immunity; rather do they show that the process of resolution is going on. Persistence of agglutinins does not indicate immunity to extension of the disease, to exacerbations, or to complications; it suggests that the process of resolution is not yet over and that the patient is accordingly liable to further trouble. With the disappearance of agglutinins it may be assumed that resolution is complete and the infective process overcome.

Type I. Pneumonia Treated with Felton's Serum

American workers have assessed the value of serum through the investigation of large series and have demonstrated a diminution in mortality in Type I. pneumococcal infections. We, on the other hand, have been forced to adopt a method based on close personal observation of individual cases. From this point of view our series of 19 is divisible into two classes.

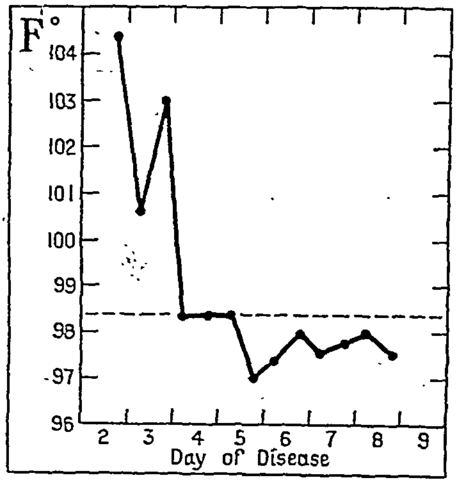

CHART 2.—Type I. pneumonia in a male aged 28. Crisis on fourth day.

(i) Cases in which serum was administered within the first four days of disease—i.e., those falling within the theoretical optimum period for benefit.

(ii) Cases in which serum was administered after the fourth day—i.e., those in which the exploitation of any available measure was justified by the gravity of the illness. A positive blood culture on the fifth day or a rapidly rising pulse and respiratory rate were factors which weighed in favour of serum treatment in this group.

We base our impressions of the value of serum therapy on the relief of symptoms, the fall of temperature, the day of crisis, the speed of resolution, and the incidence of complications.

(I) CASES TREATED WITHIN THE FIRST FOUR DAYS

In the first group 16 cases were treated; of these 5 received serum on the second day, 5 on the third, and 6 on the fourth.

SERUM TREATMENT ON SECOND DAY

Table II. shows 5 cases treated on the second day, all of which recovered. Three had a crisis on the third or fourth day, while the remaining two became afebrile on the fifth. There was an undoubted amelioration in respiratory distress, and it was commonly noted that after an initial dose of serum the patient slept quietly for some hours. These patients coughed and expectorated less than those

TABLE II.—*Cases treated on the second day*

Case.	Age.	Day of crisis.	Resolution (complete).	Complications.	Units of serum.	Serum sickness.
A ..	20	4th.	15th.	Nil.	80,000	0
B ..	30	3rd.	16th.	Nil.	80,000	0
C ..	38	5th.	36th.	Nil.	120,000	+
D ..	41	4th.	16th.	Nil.	90,000	+
E ..	25	5th.	20th.	E. 15th day	100,000	0

E. = exacerbation.

untreated, although frequently they were disturbed for a few minutes after the administration of serum in their efforts to expectorate a frothy and abundant secretion; this temporary distress was rapidly replaced by an attitude of comparative comfort. At first it was a surprise to see a pneumonic patient on the fourth day of the disease sitting up in bed, shaven and reading the morning papers. In their relative well-being they contrasted forcibly with the untreated patients who, still dyspnœic, showed little interest in their surroundings. The pulse and respiratory rate closely followed the temperature, there being an immediate fall in all three. Four out of the five cases showed a pulse of 80 or below 80 on the fourth day of disease.

Of these 5 cases 3 were poor risks, giving a long history of previous respiratory infections; one other was severely toxic with a low blood pressure, an enlarged heart, and bilateral signs of consolidation. In all 5 cases the signs observed in the lungs increased as the fever subsided, and in one case they were massive on the seventh day; but despite massive signs, resolution was complete in 4 out of the 5 cases by the sixteenth day. None of this group developed an empyema.

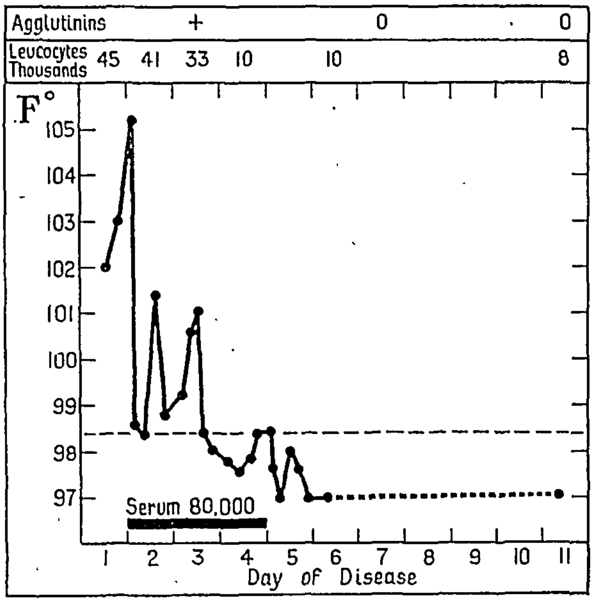

CHART 3.—Type I. pneumonia, serum-treated. Crisis on third day.

Chart 3 shows the effect of serum therapy on one of this group, in whom the blood culture was positive on admission. This patient was a chronic bronchitic and severely ill.

Leucocyte counts.—A noticeable feature in these early serum-treated cases was the speed with which the high initial count returned to normal. After the crisis, the count fell within 24 hours from 33,000 to 10,000, from 25,000 to 10,000, and from 18,000 to 9000. Continuous observations on the serum-treated cases showed that in the period of delayed serum sickness, 7, 8, and 9 days after serum, when joint pains and some fever were present, there was a rise in leucocytes often as high as 17,000–20,000. In a serum-treated case this fact should be borne in mind when using the leucocyte count as evidence for the existence of an empyema.

Blood culture.—Of the 5 cases 1 had a positive blood culture on admission. The course of this case was the most favourable of all our serum cases. There was a crisis within 24 hours of giving serum.

Agglutinins.—Felton's serum contains specific Types I. and II. agglutinins, as well as specific protective substances. In interpreting results it is therefore necessary to consider the agglutinins that have been passively introduced, as well as those that are produced actively by the patient. A dose of 10 c.cm. (20,000 units or more of Felton's serum) introduces a theoretical sufficiency of Type I. agglutinins for detection in the peripheral blood shortly afterwards; Type II., on the other hand, requires the injection of 20 c.cm. or more.

We have been unable to observe any rapid "absorption" or "neutralisation" of homologous agglutinin antibody when such is injected in the form of Felton's serum; the homologous agglutinin has been easily detectable within a few hours of giving the serum and, as far as can be judged, at least as long as the heterologous agglutinin. Nor have we found any evidence that the agglutinin content of the patient's serum is any guide as to the sufficiency of the serum administered. Sabin[20] and others have claimed that not only does the presence of homologous agglutinin indicate that sufficient serum has been given, but also that the disappearance of homologous agglutinin during serum therapy (as contrasted with the persistence of the heterologous agglutinin) is sufficient evidence for making a type-specific diagnosis as well as for indicating that more serum is required. With these views we do not agree.

SERUM TREATMENT ON THE THIRD DAY

The 5 cases treated on the third day of the disease are summarised in Table III.; 4 survived and 1 died. An early crisis was obtained in 2 (on the fourth day); one of these (J) died later of meningitis. Another was afebrile on the fifth day, another on the seventh, whilst the last (I) was not afebrile until the ninth day, and then only for 24 hours, after which his temperature again rose with serum sickness. While all five experienced symptomatic improvement, the response was not so definite as in the cases treated on the second day, although in three of the cases the pulse-rate was 80 or under on the fifth day.

TABLE III.—*Serum given on third day*

Case.	Age.	Crisis.	Resolution.	Complications.	Units dosage.	Serum sickness.
F ..	28	4th.	27th.	Nil.	70,000	+
G ..	20	5th.	37th.	Sore-throat.	130,000	0
H ..	45	7th.	55th.	Extension of consolidation.	120,000	+
I ..	27	9th.	22nd.	Nil.	120,000	+
J ..	28	4th.	Nil.	Meningitis (death).	140,000 50,000	0

One patient, a poor risk, gave a history of two previous attacks of pneumonia; he had an emphysematous chest, was ill-nourished and delirious, and had a positive blood culture, as well as a low blood pressure (90/60). In his case there was no dramatic fall in temperature following treatment, but the amelioration of symptoms, the rapid recovery, and the immediate fall in white cells turned a gloomy into a bright prognosis, and we are bound to attribute this change to the administration of serum.

Leucocyte counts.—As in cases treated on the second day, there was, where a favourable result was obtained, a quick fall in the leucocyte count. Though the immediate fall was not as rapid as in the second-day series, there was nevertheless a speeding-up of the fall as compared with the untreated cases, the average count eight days after the crisis being 7000. Observations on three cases at the most intense phase of delayed serum sickness reaction showed an average count of 22,000.

Blood culture.—In this group of five cases there was one with a positive blood culture.

Agglutinins.—As in cases treated earlier, agglutinins were detectable within a few hours of the introduction of Felton's serum. These passive agglutinins, in favourable cases, merged into those actively produced by the patient, and were present throughout the whole period of resolution.

SERUM TREATMENT ON THE FOURTH DAY

Of 6 in this category, 2 experienced a crisis on the fifth day, 2 were febrile until the ninth day, and in the remaining 2 fever persisted and merged into the fever of complications (Table IV.).

Definitely favourable responses were obtained only in young people—20 and 24 years of age—in whom an early crisis might be expected. Of the 4 older subjects, all were obviously improved symptomatically as the result of serum. There was, however, no immediate effect on the temperature, and in 2 the fever of the pneumonic process merge into that caused by an empyema. All 4, from the clinica [illegible], appeared in urgent need of medical help, and we [illegible]der that serum contributed to their recovery.

From the 6 cases we concluded that 2 reacted specifically to treatment with serum, while the other 4, although they showed no immediate effect, appeared to benefit. Thus there was less respiratory distress, less coughing, and little, if any, expectoration. The incidence of empyema was noticeably high, and it may well be that the lessening of respiratory embarrassment encourages the retention of inflammatory products within the lung and so facilitates formation of an empyema.

TABLE IV.—*Serum given on fourth day*

Case.	Age.	Crisis.	Resolution.	Complications.	Units dosage.	Serum sickness.
K ..	20	5th.	10th.	Nil.	60,000	0
L ..	24	5th.	12th.	Nil.	60,000	0
M ..	35	—	—	Empyema.	90,000	0
N ..	41	9th.	—	Empyema.	130,000	0
O ..	45	—	29th.	Hip abscess.	120,000	+
P ..	51	9th.	21st.	Nil.	60,000	0

Leucocyte count.—In the two favourable cases the leucocyte counts showed the usual rapid fall soon after the crisis. In the other cases, the original disease was so merged in the subsequent purulent complications that no fall in leucocytes was observable as a result of the serum therapy.

Blood culture.—One patient in this group had a positive blood culture on admission. He later developed an empyema. The clinical course was no more unfavourable than other cases.

Agglutinins.—In principle the same results were observed as previously described. One patient had no agglutinins at any phase, but the other 5 all had them in the peripheral blood a few hours after giving serum; they were easily detectable during the period of resolution, and, in cases with complications, so long as these were present. It is interesting to note that in one of the empyema cases the agglutinins disappeared at the end of what we had come to regard as the normal period of resolution, but reappeared with the onset of empyema. It is clear that agglutinins are no indication that a given case will be free from complications. Recovery from a complication appears to excite agglutinin formation in the same way as recovery from a straightforward pneumonia.

(II) CASES TREATED LATE IN THE DISEASE

Of three patients in this group (Table V.) one died. All three were given serum as a forlorn hope on the sixth day, because their condition was regarded as desperate. Yet even in this series two showed such rapid symptomatic improvement that we could only attribute the change to serum; one of these had a positive blood culture (sixth day), but the temperature and pulse were normal within 24 hours of giving the serum. The fatal case showed immediate symptomatic improvement, but the patient died about ten days later and two small loculated basal empyemata were found at autopsy.

TABLE V.—*Serum given late in the Illness*

Case.	Age.	Crisis.	Resolution.	Complications.	Units dosage.	Serum sickness.
Q ..	28	8th.	15th.	Nil.	60,000	0
R ..	36	7th.	16th.	Nil.	70,000	0
S ..	48	—	—	Bilateral empyema (died).	120,000	0

DISCUSSION

The cases selected for serum treatment were those which symptoms were severe or the risk poor. Two ended fatally—one from meningitis after an apparent recovery, and the other from a bilateral deep-seated empyema. Both of these had shown an initial response to serum.

In this group of 19 cases, which includes 3 treated on the sixth day, a positive blood culture was found in 4, though in the 2 patients that died the blood was sterile. It speaks favourably for the potency of serum that the 4 showing a positive blood culture recovered, and of these 1 was positive as late as the sixth day.

The effect of the serum on the symptoms was undoubted. In the early case it was immediate and the febrile period was obviously shortened. The patients were made far more comfortable and their respiratory embarrassment was greatly allayed, although the signs of consolidation remained or in some cases actually progressed, even though the crisis had occurred and the patient was afebrile.

American publications have shown the efficacy of serum in reducing the mortality of Type I. pneumonia. To Cecil, whose statistics are still the best and largest, the chief credit is due for this clinical demonstration. Of 103 cases treated within the first three days of illness he lost only 12, a mortality of 11 per cent.[8] Up to date he has treated 239 cases of Type I. with a mortality of 20 per cent., compared with a control mortality of 31 per cent. Cruickshank[13] has collected the compiled statistics of serum-treated Type I. cases in U.S.A. and this country as follows:—

	Cases.	Deaths.	Mortality.
Treated	547	94	17·3 per cent.
Untreated ..	477	148	31·0 ,,

The Medical Research Council report[14] gives the following figures from the four British centres:—

	Cases.	Deaths.	Mortality.
Treated	184	18	9·7 per cent.
Controls	301	45	14·7 ,,

It is very necessary to obtain a large series of treated cases to establish the value of serum therapy. This has been done in America, but the figures are not applicable to this country since, as we have said, there is reason to believe that Type I. pneumococcal pneumonia is less fatal here. Theoretically, serum therapy should show not only a reduction in mortality but also a shortening of illness and alleviation of distressing symptoms.

Our cases showed definite symptomatic benefit, and although this was more obvious where the serum was given within the first three days, we concluded that some effect was obtained when it was given later. If antipneumococcal serum is specific we think it should not be withheld from patients desperately ill in the sixth or seventh days. Although at this late stage its effects can only be judged by clinical impression, such judgment is not without value. There must be many cases where the exhibition of serum even late in the disease might prolong life for an extra day and thus allow a crisis to be established. From our limited experience we would regard any case of Type I. pneumonia as being in need of serum if the condition was severe and the prognosis uncertain. Moreover, since serum may "abort" the disease when given early, its use should always be considered in cases seen during the first three days; if it shortens the febrile period it will make extension or relapse less likely.

SERUM REACTIONS

Some immediate reaction was observed in all the 19 cases to which serum was administered. The pulse became faster, the patient perspired profusely, and general distress was greater. Only once did this immediate reaction reach alarming proportions, this in a man of 45. A delayed or thermic reaction occurring within a few hours has been mentioned by Leys[11] and one of his patients died of "hyperpyrexia"; but none of our cases showed this reaction.

Serum sickness developed in 6 cases, between the ninth and sixteenth days. Usually such a reaction is shown by joint pains, joint effusions, and a rise in temperature; occasionally there is urticaria. We were impressed by the severity and duration of this disturbance, for in many of the patients it caused manifest discomfort for three or more days. The temperature rose to 100° or more. The white cells increased to 15,000–20,000, and the patient complained of severe pains, which often resulted in loss of sleep and so delayed convalescence. There was little evidence of joint effusion in our cases; indeed, little could be found wrong in the joints except that movement was acutely painful. It was observed that the white cell count often rose before the onset of symptoms, while the fever usually returned pari passu with joint pains.

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THE RESULTS OF FIFTY CASES TREATED BY PSYCHOTHERAPY

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THIS paper summarises results obtained in the treatment of fifty patients at the Maudsley Hospital during 1933. Their ages ranged from 17 to 48, and twelve of them were women; they were referred to me from the out-patient department by other members of the staff,* and were seen for half an hour at a time. The maximum number of interviews was three per week; the minimum cannot be fixed, but some of the patients were seen only once every two or three weeks.

Unfortunately there is no objective standard by which a "cure" can be measured. Ability to return to work is one criterion accepted by the Maudsley Hospital for the use of the term "recovered," but as many of my patients remained at work during their treatment, it cannot be applied here. The cases have therefore been classed as Improved and Unimproved,† the former group being subdivided as follows:

Slight.—This merely implies that the patient felt somewhat more comfortable than he did to begin with. His symptoms were either less intense, or attacks were somewhat less frequent.

Moderate.—The patient's symptoms showed a satisfactory diminution in intensity or frequency, but nevertheless had not disappeared.

Considerable.—Complete or almost complete disappearance of symptoms.

The terms are not satisfactory, depending as they do on a mixture of the physician's observations and the patient's own assessment of his feelings. In functional disorders, however, the patient's comfort and ability to carry on is so far linked with subjective conditions that his feelings may be allowed relatively greater weight.

The four types of treatment used may be described as follows:—

Medicine and Reassurance.—The nature of the symptoms was explained to the patient. He was told that other people had similar ones, that there was no danger (especially of insanity), and that he would recover. The medicine given depended on the conditions present; usually pot. brom. was employed, though occasionally a placebo such as mist. gent. c. sod. was prescribed. If there was any organic disorder this was treated appropriately, but not during analytic treatment. It was found inadvisable for the psychologist to act as the general medical attendant, and the patient's own doctor was enlisted to deal with such problems.

Suggestion.—Here the patient was made to lie down, and a slightly hypnoidal state was induced. Suggestions of recovery were made, both general and specific for the symptoms.

Psychological Talks.—The patient was seen once or twice a week. His history was gone into, and symptoms reviewed and explained in the light of their apparent ætiology.

Analytic.‡—The patient was made to lie down. Free association, with or without the use of dream material, was employed. The transference was analysed. The patient was never seen less than twice a week, and usually three times. Treatment extended over some months, though never above nine and rarely longer than six. Sessions lasted half an hour.

RESULTS

Of the 50 patients 32 improved, 16 failed to so, and 2 got worse.

Anxiety States.—The results in this group are s out in Table I.

The severe case which improved considerably was one of long standing, previously treated elsewhere, without avail, by medicine and reassurance. Of the two moderately severe cases with considerable improvement one was a woman of 35 with an acute anxiety state, who had 43 analytic sessions. In her case the anxiety gave way to a good deal of sexual desire, which had been absent previously. As she was a person who stood a reasonable chance of getting married, this was not unsatisfactory, though it raises the question whether such a substitution would be beneficial in all cases. The other patient was a man of 43, who improved after 11 psychological talks.

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* As the whole question of psychotherapy is a controversial , I would like to make it clear that once a patient was handed to me I was allowed to use my own discretion regarding the of treatment adopted. These methods, therefore, were necessarily endorsed by other members of the staff.

† The results were those obtained at the time of discharge. As no "follow-up" was done, there are no reports from relat or friends to confirm or refute them.

‡ The term "analytic" is used as opposed to psycho-analysis in the Freudian sense. The method employed differed in so as the sessions were less frequent and shorter, and the treatm did not last nearly so long. Although a transference was es lished and analysed, where necessary advice and occas reassurance was given, and a certain amount of persuasion I think the physician is in a position to distinguish be demands for reassurance and advice which are arising fro analytic situation, and where these demands are really a priate and determined by a reality situation. The m corresponds largely to that of Stekel of Vienna.

TABLE I.—*Anxiety States*

	Cases treated.	Improved: Considerably.	Improved: Moderately.	Improved: Slight.	Unimproved.
Moderate	17	2	7	5	3
Severe	7	1	—	1	5
Totals	24	3	7	6	8

Of the 8 cases which were unimproved, 5 were chronic and 3 subacute. Six of them, moreover, discharged themselves without warning from the second to the tenth session. Five patients (4 of them being among the self-dischargees) had been treated medicinally before.

TABLE II.—*Depressive Cases*

	Cases treated.	Improved: Considerably.	Improved: Moderately.	Improved: Slight.	Unimproved.
Moderate	8	2	5	—	1
Severe	3	—	—	2	1
Totals	11	2	5	2	2

Depressive Cases.—These are summarised in Table II. One patient who improved considerably was in a recurrent depression at the third spell; he was seen three times. Of the unimproved, one was a case of depression in the puerperium, which came to me at the beginning of a relapse, and the other a man who was worried and dissatisfied with his work, and who showed paranoid features.

One depressive who improved was a man who suffered from listlessness and lassitude. He worked 13 hours a day and only had one Sunday off in three as spare time. This lassitude was at first attributed to overwork, but after a month the symptoms improved with no change in the external conditions. This is of interest, since overwork is often stated to be a cause of neurotic conditions, yet here was a grossly overworked man who improved.

Obsessionals.—Of 3 patients treated, 1 improved and the other 2 were unimproved. The case which improved was a severe one and the improvement shown was considerable. The patient was a man of 60 who had been overworked in the office and had two previous attacks. He was treated with a holiday, bromide and reassurance, and improvement took place gradually over six months.

Both the unimproved cases were moderately severe. One was subacute, and the patient had to leave London after six sessions because of his employment.

The other was acute and was treated analytically at 21 sessions; the patient then discharged himself but has since returned. We had been discussing his hostile attitude towards his father, and he suddenly felt an impulse to leave; "treatment was useless." On resuming treatment we soon returned to the subject of his attitude towards his father, and he said that it again had aroused a strong impulse not to come up. He was again under treatment for a month, twice weekly, but failed to return to me after a holiday.

Hysteria.—Improved, 4; unimproved, 2. Of the former, one was a severe case of "faints" which improved considerably; and of three moderately severe cases one improved considerably and the others moderately. The patient who improved considerably had fits resembling tetany; he was seen 7 times, and reassured.

One of the moderate cases was analysed at 36 sessions, thrice weekly. She was a woman of 45 who had hysterical feelings of faintness, which were never witnessed, and which improved but did not disappear, according to the patient's account. She was an interesting case from the point of view of the importance of external and internal factors. An educated woman who had lost all her money and could trace no relations, she had supported herself for many years. When first seen she was unemployed and was living on 17*s.* a week. After a month she again obtained employment. There was no improvement in her symptoms after she returned to work. Although she was very emotional and unable to grapple with problems of a subjective and especially a "moral" nature, she never gave way under the strain of her very difficult circumstances.

One of the cases that failed to get better was a hysterical amnesia in a woman of 24 which did not improve after 48 sessions of psychological talks; the other was a case of sleep-walking and dermatitis artefacta, in which the patient attended nine times but "failed to see why she should be treated at all."

Sexual Difficulties.—A number of cases of sexual disorders were seen during the year, but apart from one patient with frigidity, none of them could attend over any length of time and no attempt was made to alter the sexual disability. In the time available it was possible, however, to do something to relieve their anxiety or depression—often by adjusting their attitude towards their own difficulties.

Four cases of homosexuality were seen in this group. One patient, a married man, had committed an offence which he was very disturbed about. A second, a strapping man, working to support his mother, considered himself "a moral degenerate," and was not unnaturally depressed in consequence. A third was very unhappy about his condition, not from the social point of view but because of his inability to lead a satisfactory sexual life along the lines he desired, and had on three occasions attempted suicide. He had never had heterosexual inclinations up to the age of 26, but then had intercourse with a woman and was potent, though deriving very little satisfaction from the act. He and the married homosexual are interesting as examples of "bisexual" men.

As these cases were never treated for their sexual difficulties they cannot be included numerically, and have been mentioned from the point of view of interest only.

The single case treated was one of frigidity in a woman of 30, who had been previously treated by reassurance and advice, but to no avail. She improved after 76 sessions of analysis, at the end of which time she was also given advice regarding technique. This advice had been given previously, but had never been accepted, so it appears reasonable to argue that the analysis had brought about the change that made it possible for her to arrange her sexual life in a way that would bring her pleasure. She also became a much quieter and less agitated person.

Schizophrenics.—Four were treated, with no improvement. One was a man of 25 with obsessional features. He suddenly left after ten sessions of an analysis which was being tried and got married (of which he had said nothing). The others were under 20. Two of them discharged themselves, and the fourth, who had gonorrhœa, and who insisted that he should be at liberty to have sexual intercourse without any measures being taken to prevent infecting his partner, was referred back to the venereal diseases clinic as being unresponsive to psychotherapy.

Behaviour Problems.—There was one case only, that of a girl of 17 in service, who had temper tantrums. They were brought about by a family situation and the girl's mismanagement by her mother. The difficulties improved considerably with half a dozen talks.

DISCUSSION

One of the obvious difficulties of psychotherapy is the expenditure of so much time on single cases. This particularly applies when the patient has small means, or at a clinic where a comparatively large number of cases have to be treated. It becomes important, therefore, to determine the most satisfactory method of treatment, and to decide how far a given case will prove responsive. In a hospital clinic it is especially undesirable to spend much time over a case which will not respond to treatment at the expense of one which will. Similarly, unless there is very great advantage to be gained by a longer method (such as an analysis) rather than a shorter, the latter should of course be chosen.

In a paper like this, dealing with only 50 cases, it is impossible to go into detail about the kind of treatment that will prove most satisfactory in particular cases. Moreover, as the method adopted in each case depended only on my own judgment of what was required, the issue is correspondingly prejudged and the findings invalidated. However, it may be worth while to set out the results according to the different methods of treatment used (Table III.).

TABLE III.—*Methods and Results*

Method.	Cases treated.	Improved.	Av. att.*	Unimproved.	Av. att.*
Analytic	10	7	51	3	11
Psy. talks	23	12	14	11	6
Reass. and med.	15	11	7	4	4
Suggestion	2	2	12	0	0

* Av. att.=Average attendance in half-hour sessions.

The comparatively poor results of the psychological talks are to be explained as follows. These are the results of clinical work and not an experimental investigation; I had to decide what method to use, and I was only prepared to embark on an analysis where I felt the trouble would be repaid. Reassurance and medicine therefore were used in the cases that seemed likely to respond most easily, and there was a tendency to keep psychological talks for the cases which clinically appeared to be the hardest to treat.

It will be seen that just over two-thirds of those analysed improved, two-thirds of those having reassurance and medicine, and just under half of those having psychological talks. As I have just said, these were the ones which at the start probably appeared least responsive. Of 10 analysed, 4 had been previously treated unavailingly by reassurance. Out of 16 improving on reassurance and medicine 7 had been previously treated, and 4 out of those treated by psychological talks.

PROGNOSIS

Turning to prognosis, is it possible to discover any factors which will give an idea how far a particular case is suitable for treatment? With this in mind, the following points have been investigated in the cases reported.

1. *Objective factors.*—(*a*) The chronicity and severity of the neurosis. (*b*) The influence of external factors, grouped under business, domestic, and financial worries.

2. *Subjective factors.*—(*a*) The sex life of the patient and whether it is satisfactory. Also the question of conflicts centring around masturbation, since this frequently proved to be a cause of worry. (*b*) Certain rather ill-defined factors discussed below.

While actually working with patients it struck me that there were certain cases which from the beginning appeared more hopeful than others. It was very difficult to be precise about this, but, broadly speaking, the ones who were judged to have a good prognosis were those who were intelligent and coöperative, were really suffering from their symptoms, and had a certain amount of psychological insight, and those whose mental processes and outlook were not too set. The other group were those who "had an axe to grind" with their illness, who were set and self-centred.

Certain of these characteristics have been investigated in the present series to see if anything emerges.

It was found that acute cases were rather more responsive than the others, but the severity of the attack seemed to bear no relation to the response to treatment. This largely agrees with my impression, in dealing with cases, that the actual severity of the symptoms did not necessarily mean poor response to treatment; indeed, it very often seemed to increase the patient's desire for improvement. Table IV.

TABLE IV

	Domestic worries. Per cent.	Business worries. Per cent.	Financial worries. Per cent.
Improved	23	10	10
Unimproved	23	14	14

shows the relation of domestic, financial, and busine worries to improvement, and the figures again agre with the clinical impression that although suc troubles may worry and depress the patient, the do not enter into the structure of the remainin neurosis. The case cited under "hysteria" was a interesting example of this.

Turning to the subjective conditions, Table shows that of the failures over three times as man

TABLE V

	Sex life unsatisfactory. Per cent.	Masturbation. Per cent.	Worry ove masturbatio Per cent.
Improved	14	20	16
Unimproved	50	32	41

had unsatisfactory sex lives—which accords with mos people's clinical findings. Of those who failed t improve nearly three times as many were worrie over masturbation (past or present), or the tempta tion to it—a matter which has to be gone into wit nearly all patients. As will be seen, masturbatio and worry over it do not coincide. This is in accord ance with the views of Stekel[1] who remarks tha "neurosis often commences when masturbatio ceases."

Coming finally to the subjective characteristic above mentioned, we get the following results. Fo clarity the somewhat vague terms have been define as far as possible. They are:

Discontented is where the patient was generally dis gruntled about himself and his affairs, and grumbled good deal.

Distractable means that the patient was prepared t coöperate and listen, as opposed to the type of patien who always tended to return to discussing his particula set of symptoms.

Egotistical: self-centred.

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[1] Stekel, W.: Onanie und Homosexualität, Berlin, 1921, p. 18.

Somatic is where the physical side of the picture—tachycardia, pains, aches, feelings of pressure—predominated over more purely psychological symptoms.

Discontentedness was present in about half those cases which improved and half those which did not, and distractability in about a third of both. On the other hand obsessional and hypochondriacal features were present in about 10 per cent. of those who improved and twice as often in those who did not. Egotistical and somatic features were present in about one-third of those who improved, and in half those who did not. Depression was present in about two-thirds of both. From this it appears that obsessional features, hypochondriacal, egotistical, and somatic features, tend to make the prognosis worse, as they occurred approximately twice as often in those cases which failed to improve.

Finally, intelligence in relation to improvement was investigated, as was the relationship between improvement and cases discharging themselves. It was found that intelligence played no part, about two-thirds of improved and unimproved being intelligent, and that half the cases who did not improve discharged themselves, averaging nine sessions. None of those who improved discharged themselves.

COMPARISON OF RESULTS

Tabulated reports of the results of psychotherapy are difficult to find, but the results obtained are compared with the annual report of the Institute of Medical Psychology for 1933, and those in Kessel and Hyman's[2] report on the results of psycho-analytic treatment. The results of the former are :—

Cured or much improved ..	21·5 per cent.
Improved	48·8 ,, ,,
Slightly improved	20·4 ,, ,,
Not improved	9·3 ,, ,,
Total cases treated	270

These results are summarised for a report, not for a paper, and though a table of the type of patient treated is included with a follow-up over three years, no explanation of the terms employed is given. Kessel and Hyman, investigating 33 cases, used very exacting criteria of what constituted a cure by psycho-analysis without any change in environmental factors. They concluded that only five were specifically cured by this method. With modification of the environment, however, in conjunction with analysis, 17 other cases improved. These latter figures correspond roughly to the total results obtained by four different psychotherapeutic methods here.

SUMMARY

1. *Results in different types of cases.*—Fifty cases of functional nervous disorders were treated during the year. Of these 31 improved, 2 got worse, and the others remained unchanged. The results may be grouped as follows :—

Anxiety states improved ..	16 out of 24
Depressives ,, ...	9 ,, ,, 11
Obsessionals ,, ...	1 ,, ,, 3
Hysterics ,, ...	4 ,, ,, 6
Frigidity ,, ...	1
Schizophrenics failed to improve	4
Behaviour problem improved considerably ..	1

2. *Methods employed.*—Improvement was noted in 7 out of 10 cases treated analytically, in 12 out of 25 treated by psychological talks, in 11 out of 16 treated by reassurance and medicine, and in 2 out of 2 treated by suggestion.

3. *Prognosis.*—(*a*) The severity of the attack appeared to bear no relation to response to treatment. (*b*) Domestic, financial, and business worries seemed to play no significant part in determining the outcome of the treatment of a neurotic condition not specifically caused by one of these factors. (*c*) Sex life was unsatisfactory in 50 per cent. of cases who failed to improve, compared to 14 per cent. of those who did. Worry over masturbation was often present. (*d*) Obsessional, hypochondriacal, egotistical, and somatic features make the prognosis worse.

Conclusion.—From the small number of cases investigated it appears that psychotherapy is of value, since approximately two-thirds of the cases improved. There is no evidence to show that any one method of treatment was predominantly successful over the others, but each has its successes. At present the choice must be a matter for individual judgment and predilection. Nevertheless, the results of investigating prognosis in relation to character give some indication of the type of person most likely to respond to treatment, and give some guidance about the advisability of spending much or little time on a given patient.

I should like to thank Dr. Edward Mapother for kindly allowing me to make use of the material derived from patients attending the Maudsley Hospital.

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[2] Kessel, L., and Hyman, H. T.: Jour. Amer. Med. Assoc., 1933, ci., 1612.

CLINICAL TRIALS WITH A NEW ANTITYPHOID SERUM *

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In experiments on mice, published in The Lancet[1] last year, it was established that antityphoid sera containing O and Vi antibodies exert two separate and distinct effects, viz :—

(*a*) The Vi antibody confers protection against infection with highly virulent strains of *B. typhosus*, by suppressing the multiplication of the organisms.

(*b*) The O antibody appears to be chiefly responsible for effecting the neutralisation of the endotoxin of *B. typhosus*.

It was concluded that the efficacy of a therapeutic antityphoid serum would depend on the presence in it of both these antibodies.

Thanks to facilities granted by the Colonial Office and by the Government of Palestine, I have had the opportunity of testing on a number of typhoid patients whether the two effects, established in prophylactic experiments in mice, are demonstrable also in therapeutic trials in man.

Antityphoid sera (Nos. 1 and 2) from two horses were used in this investigation. They were prepared in collaboration with Dr. G. F. Petrie and his colleagues at the serum department of the Lister Institute at Elstree. In addition, the serum from a normal horse was used for the treatment of a number of control cases. The antibody content of the sera, determined by agglutination, and the results of protection tests in mice are shown in Table I. The details of the mouse protection tests are omitted. The table only indicates that the two antityphoid sera possessed both protective power against infection with live organisms and neutralising power against the toxic effect of a dead vaccine of *B. typhosus*. Normal horse serum had no effect in either of these capacities.

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* Report to the governing body of the Lister Institute and the Colonial Office under whose auspices the clinical trials were carried out in Palestine.

[1] Felix, A., and Pitt, R. M.: The Lancet, 1934, ii., 186.

TABLE I

—	Antityphoid serum.		Normal horse serum.
	No. 1.	No. 2.	
Agglutination—			
O titre	20,000	40,000	200
Vi titre	400 + +	400 +	20 ±
Protection of mice—			
Against infection with live organisms ..	+	+	—
Against the toxic effect of dead vaccine ..	+	+	—

NATURE OF THE TRIALS

The three sera were used unconcentrated and the standard dose for adult patients was 50 c.cm. administered by the intramuscular route. In severe to very severe cases this dose was given on three consecutive days—i.e., a total of 150 c.cm. of serum was injected intramuscularly. In cases of extreme severity (patients actually moribund or in a desperate condition) the serum was administered intravenously, again employing 50 c.cm. as the routine dose, which was repeated twice or three times at intervals of 24 hours, making a total of 150 c.cm. or 200 c.cm. per case. According to the history as regards previous serum treatment the intravenous injections were either given without particular precautions or the patients were desensitised by injecting first 0·1, 0·2 and 0·5 c.cm. at intervals of half an hour and then the full dose of 50 c.cm.

The total number of typhoid patients treated in Palestine during October–November of last year and the routes of administration of the serum are shown in Table II. The Table shows that most patients were adults. Only 9 of the 60 patients were children below fourteen years. The dosage for children was according to the following scheme:

TABLE II

—	Patients treated with—	
	Antityphoid serum.	Normal horse serum.
Intramuscularly	32	14
Intravenously	10	3
Intrathecally	1	—
Total	43	17
[Children below 14 years] ..	[6]	[3]

Children below 5 years	10 c.cm.
,, 6–9 ,, ...	20 ,,
,, 10–14 ,, ...	30 ,,
,, over 15 ,, ...	*50 ,,

* Full dose for adults.

It is further seen from the Table that the number of control cases, treated with the normal horse serum, was much smaller than that of the patients treated with antityphoid serum. As soon as the difference between the results following the injections of the two types of serum became evident, the physicians in charge of the patients could not be induced to continue the use of the control serum.

The patients were not subjected to the treatment indiscriminately. They were selected with a view to exclude mild cases and those of moderate severity. The procedure was to class each case before the beginning of the serum treatment under the headings "severity of toxæmia" and "severity of pyrexia," and from these two criteria the "total severity" was derived. After the injections the "effect on toxæmia" and the "effect on pyrexia" was assessed and recorded separately.

The great majority of the patients came from the Jaffa-Telaviv district where the incidence of typhoid fever was still high during October–November, 1934. Table III. gives the exact figures.

TABLE III

Locality.	Hospital.	Physicians in charge.	Patients treated with—	
			Anti-typhoid serum.	Normal horse serum.
Jaffa ..	Government Hosp.	Dr. R. Reitler.	25	9
Telaviv ..	Municipal Hosp., "Hadassah."	Drs. M. Levontin and W. N. Wolff.	12	4
Jerusalem	Government Hosp.	Dr. N. Hamzeh.	3	4
,,	German Deaconness Hosp.	Dr. N. T. Canaan.	3	0
	Total		43	17

Uniformity in classifying the cases with regard to their severity was assured by the fact that 50 patients out of a total of 60 were treated in two hospitals under the care of physicians with particular experience of typhoid fever. It was also facilitated by the fact that in most cases the serum treatment was begun during the second or third week of the illness with the symptoms of the disease fully developed. The relevant data are recorded in Table IV.

TABLE IV

Serum treatment commenced during—	Patients treated with—	
	Antityphoid serum.	Normal horse serum.
First week	7	1
Second ,, ...	25	12
Third ,, ...	6	3
Later than third week..	5	1
Total	43	17

RESULTS

The results of the serum treatment observed in the 17 control cases can be dealt with very briefly. Following the intramuscular or intravenous injections of normal horse serum there was in no instance any change in the toxæmic symptoms of the patients. In some cases the fever was lowered, but this effect was only temporary, and after a few days the temperature rose again. The general condition of most of the patients treated with normal serum was rather worse than it had been before, and this caused the physicians to discontinue its use early in the course of the investigation.

The effects of the treatment with the two antityphoid sera, on the other hand, were quite different. To avoid reproduction of a considerable number of individual case-charts I have attempted to summarise the results in Table V. It is seen that the series of 43 cases treated with antityphoid serum includes only 1 case classed as "mild" and 9 of "moderate severity," whereas 21 cases are designated as "severe or very severe," and 12 as "extremely severe." The last group is composed of patients whose condition before the commencement of the serum treatment was considered as desperate or who were actually moribund.

TABLE V.—*Effects of Treatment with Antityphoid Sera Nos. 1 and 2*

Clinical course.	Cases treated.	Effect on— Toxæmia.		Effect on— Pyrexia.		Died.
		+	—	+	—	
Mild	1	0	0	1	0	0
Moderately severe ..	9	3	0	6	3	0
Severe or very severe	21	15	3	11	10	0
Extremely severe ..	12	6	6	5	7	5
Total	43	24	9	23	20	5

It has been mentioned above that each case was classed separately under the headings "severity of toxæmia" and "severity of pyrexia," and that a "total severity" was derived from these two criteria. For the sake of simplicity this "total severity" alone is indicated in the first column of Table V., whereas "effect on toxæmia" and "effect on pyrexia" are recorded separately. The symbol + denotes a marked favourable effect, and — indicates that there was no effect. In each subgroup the sum of the two figures recorded under the heading "effect on pyrexia" is equal to the total number of cases treated. Under the heading "effect on toxæmia," however, the sum of the two figures is, in the first three subgroups, smaller than the corresponding total number; the difference indicates the number of cases without marked toxic symptoms.

Table V. shows that the effect on the toxic symptoms was stronger and more regular than that on the fever. Out of the total of 43 cases, 33 had definite toxic symptoms of varying degrees up to complete stupor and severest status typhosus. Of these 9 cases only remained uninfluenced by the serum treatment, whereas in 24 cases the toxic symptoms ceased, usually after the second or third dose of serum, and did not reappear. On the other hand, the fever was clearly shortened and definitely suppressed only in 23 cases, whereas 20 remained either entirely uninfluenced or showed merely temporary lowering of the fever, similar to that observed in the control group of cases treated with normal serum.

When the different subgroups in Table V. are considered separately, it is seen that with the increasing severity the numbers of failures increase under both headings. This finally led to the application of the intravenous route instead of the intramuscular injections which had been used throughout the greater part of the trial. The effect both on the toxæmic symptoms and on the fever was very much stronger following intravenous administration. However, it will be remembered from Table II. that only 10 of the 43 patients recorded in Table V. received intravenous injections, whereas 32 were treated by the intramuscular route.

To give an indication of the powerful antitoxic action of the immune serum it may be mentioned that in some instances two or three injections, given intramuscularly or intravenously at intervals of 24 hours, transformed a condition of complete unconsciousness into one of well-being. This effect was most striking in a number of patients whose toxic symptoms disappeared while the fever still continued unabated. The condition sharply contrasted with that observed in some of the patients of the control group, where the non-specific action of the normal serum resulted in a temporary lowering of the fever with the toxic symptoms left entirely undiminished.

It is not possible, without reproducing individual case-charts, to discuss the results in greater detail. The small number of cases treated also does not permit of any calculation of a reduction in the death-rate or in the duration of the fever period. All that can be stated is that a number of patients were justifiably considered as having been saved by the serum treatment, while in a number of less gravely ill patients the fever period was considerably shortened.

Two unusual cases seem worthy of being mentioned specifically. Both patients were treated by Dr. R. Reitler at the Government Hospital, Jaffa.

A woman of 32 developed on the twenty-third day of her typhoid fever meningitic symptoms and severest status typhosus. Lumbar puncture revealed clear fluid under high pressure; 70 c.cm. of fluid was removed and 40 c.cm. of antityphoid serum injected intrathecally, and there was slight improvement. The same procedure was repeated 48 hours later and resulted in definite recovery. The patient was discharged from hospital 14 days after the second injection of serum.

The second case was one of perforation of a typhoid ulcer in a male patient of 20, who left his bed in a semi-conscious condition on the fourteenth day of the disease. Dr. W. E. Thompson, surgeon specialist to the Department of Health, Jerusalem, operated on the patient about 18 hours after the perforation had occurred and administered 80 c.cm. of antityphoid serum directly into the peritoneum. The patient also received 50 c.cm. of the serum by the intramuscular route. He recovered, and the surgeon attributed this to the effect of the serum treatment.

There can be little doubt that the antitoxic activity of the serum is due to the O antibody. The serum No. 2 (see Table I.) with an O titre of 1 in 40,000 acted more strongly on the toxic symptoms than the serum No. 1 with an O titre of 1 in 20,000. To what extent the suppression of the fever is to be attributed to the action of the Vi antibody cannot be answered from the present trial, since there was no control group of cases treated with a serum containing O antibody alone. Assuming that pyrexia is an expression of the multiplication of the invading organisms with consequent production of toxin, we would conclude from the protection experiments in mice with Vi antibody alone that the effect of the latter in suppressing invasion would be most clearly manifested by the degree of fever in the earlier stages of enteric and in relapses. The earlier therefore the case comes under treatment the greater should be the opportunity for the Vi antibody to exercise the invasion-suppressing function so clearly exhibited in the mouse experiments. It is proposed in future clinical trials to compare a pure anti-O serum with the serum we have been discussing, containing both O and Vi antibodies.

However, the main object of the present investigation was to establish in therapeutic trials in man whether or not some action on the toxic symptoms and on the fever was exercised by the antityphoid serum. It would appear that the answer to this question is in the affirmative.

I wish to express my gratitude to the Colonial Office and to the Department of Health of the Government of Palestine for the facilities granted for carrying out this investigation and for the hospitality extended to me in Palestine. Dr. R. Reitler, medical officer, Government

Hospital, Jaffa; Dr. M. Levontin and Dr. W. N. Wolff of the Municipal Hospital, "Hadassah," Telaviv; Dr. N. Hamzeh, medical officer, Government Hospital, Jerusalem; Dr. N. T. Canaan of the German Deaconness Hospital, Jerusalem, have been in charge of the patients treated. It was only their kind and most efficient coöperation that made this investigation possible. I am glad of this opportunity of thanking all of them.

SURGICAL CLOSURE OF TUBERCULOUS APICAL CAVITIES

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THE problem of the surgical closure of tuberculous apical cavities is one which is being seriously considered by surgeons at the present time, the more so as the value of total collapse of one or other lung by major surgery has become fully established. Tuberculous disease with cavitation which is confined to the apex is frequently seen, and it is naturally felt that the collapse of the whole of one lung by means of a total thoracoplasty may be a severe and unnecessary price to pay when the disease is localised. This is the main reason for the determined effort which has been made to produce a successful apical collapse without interfering with the rest of the lung.

We propose to deal with complete thoracoplasty in a later paper, but there are certain aspects of this major procedure which have a definite bearing on partial apical operations. Thus, its use should be confined to chronic fibrosing and cavernous cases in which pleural adhesions (either complete or partial) preclude the employment of artificial pneumothorax. As a general rule total thoracoplasty is applicable only to those cases in which there is no active disease in the opposite lung; moreover, this operation is a severe one which usually has to be performed in two stages (unpleasant though this is for the patient), and which involves a certain amount of shock and some, albeit slight, permanent deformity. To a certain extent these restrictions apply to localised apical operations, though in considering their indications and contra-indications we shall see that the restrictions are not quite so narrow.

In many cases of upper zone cavitation where an artificial pneumothorax has failed, or even as a complement to artificial pneumothorax, phrenic avulsion is performed. This is clearly an incomplete operation, but though its main effect is usually upon the base of the lung, it may also have a distinct beneficial influence upon the apex (see Fig. 1). It must be admitted that the effect on apical cavities is not as a rule very great, yet the operation is nearly always worth a trial on account of the minimal risk and discomfort associated with it. It can always be performed under a local anæsthetic, and need only entail the patient being in bed for a few days.

INDICATIONS FOR APICAL SURGERY

The type of case in which localised surgical procedures have seriously to be considered is nearly always one in which there are cavities in the apex, and where pleural adhesions prevent a complete artificial pneumothorax. The indications for the selection of cases are, in general, the same as those for a total thoracoplasty; but as we are now dealing with a partial operation in which a considerable area of undiseased lung is going to be left intact and functioning, a greater degree of latitude can be allowed. Moreover, these operations are responsible for much less shock and disability than is caused by a complete thoracoplasty. In the case of the total operation, the whole of one lung is permanently and irrevocably put out of action—a situation that does not apply to partial procedures. Thus, whereas no wise surgeon would countenance a complete thoracoplasty if there was any suspicion of active disease in the opposite lung, it is quite possible, and at times advisable, to produce apical collapse even when it is known that the opposite side is affected. In certain cases of bilateral apical cavitation (of a chronic type) it is perfectly feasible and often of great advantage to do a partial operation on both sides, though of course on different occasions.

The chief indications for performing collapse operations on the apex are as follows:—

1. The ideal case is one controlled by general treatment in which there is a single apical cavity without much surrounding fibrosis. Such a patient may feel and appear perfectly well, but the persistence of tubercle bacilli in the sputum, of slight or occasional fever, or of hæmoptysis is sufficient to show that the disease is not arrested. It is quite certain that the patient will never be cured, or even be safe from a spreading infection, until the cavity is obliterated. The prospect of further danger to himself and to others is always present as long as tubercle bacilli are found in the sputum.

When fibrous infiltration is present in bulk round cavities, the chances of any localised apical operation producing effective collapse are mechanically reduced. If the infiltration is extensive, it is more or less impossible, by a localised operation, to collapse only the diseased area, and the advisability of performing a complete thoracoplasty should then be considered.

2. In many more advanced or non-quiescent cases, and even in bilateral cases, there may be an open apical cavity which is acting as a source of infection for the base of the same lung or for the opposite lung as a whole. The outlook is here not so good, but it is often wise to close the cavities by surgical means, as it often happens that the patient's general resistance, supplemented by appropriate general treatment, will be able to deal with the disease in uncollapsed zones. This constitutes a group of cases from which the number selected for surgical treatment will obviously depend on the views of the physician or surgeon concerned.

POSSIBLE DANGERS AND COMPLICATIONS

Though the dangers, complications, and unpleasantnesses of these partial operations are far less than those of a total thoracoplasty, they nevertheless do exist. There is a certain amount of shock to be reckoned with, but this can be greatly diminished by suitable preparation, proper anæsthesia and, above all, by quick and gentle technique. It is indeed remarkable how slight the shock often appears to be in these tuberculous patients, and how well the procedures are tolerated.

It should also be remembered that in closing an apical cavity by surgical means some pus and active bacilli may be squeezed out, and there is the possibility that they may be inhaled into the base of the lung on the same or even the opposite side. This holds equally well in the performance of a total thoracoplasty, and is used as an argument for doing the lower stage first when the operation is being done in two stages. There is no doubt that a preliminary phrenic avulsion greatly reduces the chances of an aspiration of this kind into the base of the lung, and with this precaution we personally have never seen any evil results due to an aspiration infection following upon an apical collapse.

The rupture of an unduly rigid or brittle-walled cavity as a result of uneven pressure during its collapse is a possibility. This complication may be guarded against by care and gentleness, and by making the extent of the operation and subsequent collapse slightly greater than that required just to cover the cavity.

Occasionally a spread of the disease or activation follows on the operation. When this occurs it is probably due to faulty anæsthetic methods, to an active lesion having been overlooked, or perhaps to an increased and too great functional strain being placed on the intermediate zone of lung tissue as a result of the collapse.

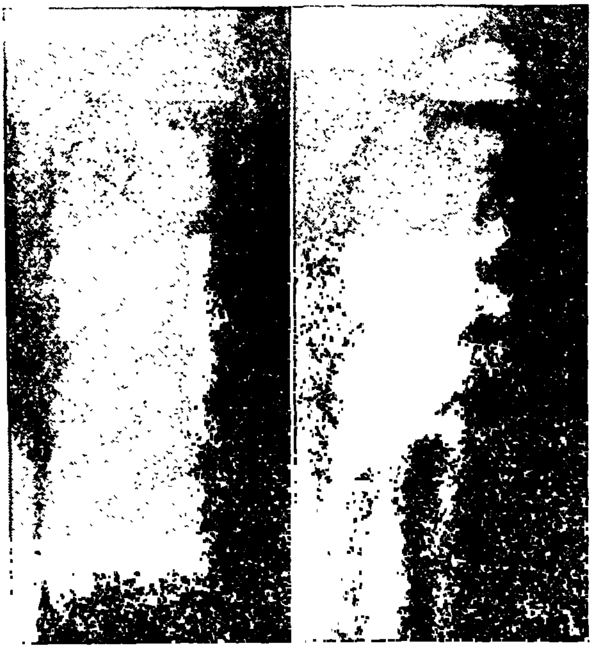

FIG. 1.—Diminution in size of an apical cavity following phrenicectomy. In the left-hand radiogram a large cavity is seen situated immediately under the right clavicle with infiltration spreading out to the periphery. The right-hand photograph shows the condition after phrenicectomy. The right diaphragm is considerably raised, while the cavity is slightly higher placed and shows a reduction in size.

Failure to obtain complete collapse of a cavity is unusual, but it may be seen either when the walls of the cavity are very stiff, or when it is situated especially close to the mediastinum. This nearly always means that the wrong operation has been selected, or that the operation has been incompletely performed, an insufficient number or inadequate length of rib having been removed. One annoying result of this complication is that the cavity may remain open and more or less healthy lung tissue around it be collapsed, and then further operation will have to be resorted to before the cavity is collapsed.

Technical difficulties and dangers undoubtedly exist in these apical operations. Removal of the first rib should be as complete as possible (see below), and the dissection to free this structure is fraught with the risk of injury to important anatomical structures in relationship with it. The avoidance of serious damage can only be effected by experience, the necessary skill, and perhaps with the aid of a few special instruments.

OPERATIVE PROCEDURES

Phrenic Avulsion and Phrenic Crushing have often been described, and little need be said about them except to point out that though they are minor procedures, easily carried out under local anæsthesia, they are in no sense easy. However many hundred times the surgeon may have exposed the phrenic nerve, he will occasionally meet a case in which the nerve is extremely difficult to find.

In connexion with apical lesions, phrenicectomy by itself, though beneficial, is hardly ever the only operation required. We make a practice of doing it as a preliminary to the more extensive apical operation, very largely with a view to preventing aspiration as described above.

There is little difference between phrenic avulsion and crushing of the nerve, except that the former is permanent and leads to atrophy of half the diaphragm. It is the fibrous atrophied appearance of the hemidiaphragm, occasionally seen at post-mortem months or years after a phrenic avulsion, which has led some physicians and surgeons to advocate crushing of the nerve, with its possibilities of regeneration and less

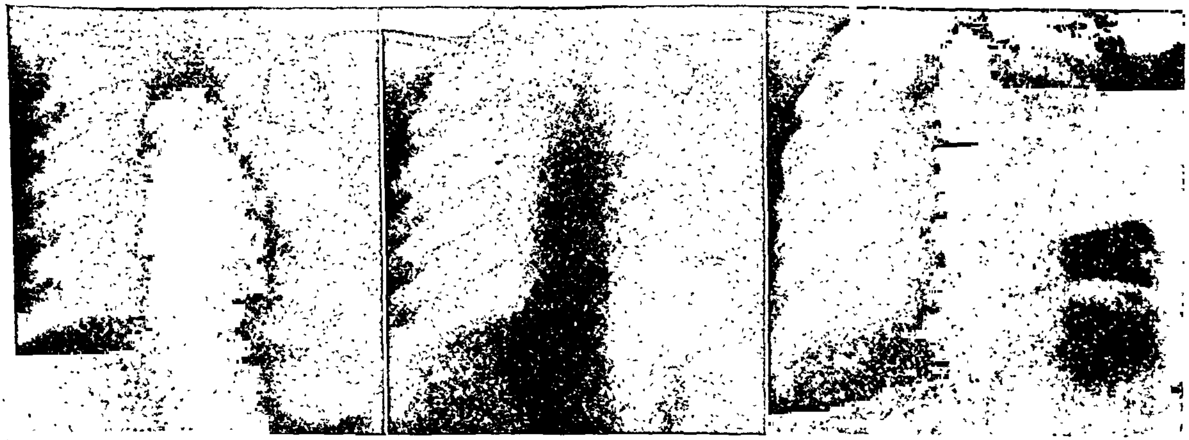

FIG. 2.—Closure of an apical cavity by phrenicectomy and apicolysis. The first radiogram (left) shows a large cavity situated below the left clavicle, and definite upper zone infiltration. There are calcified areas on the right. Following left phrenicectomy the cavity is reduced to about half its former size (middle photograph) and lies higher and more towards the periphery. There was still some cough and T.B. in the sputum. After apicolysis and wax implantation the cavity and apical tissue are completely obliterated (right). The uncollapsed lung showing between the lower limit of the "plombe" and the diaphragm is actually more extensive than appears in the radiogram.

complete atrophy. We are not, however, convinced that this is an argument of any force.

Scalenectomy consists in division of the scalene muscles and has been advocated as a supplement to phrenicectomy in certain cases of apical disease. Its object is to bring about a partial dropping of the first rib, and therefore slight collapse and diminution of movement at the apex. We have performed the operation on several occasions in conjunction with a phrenic avulsion quite easily through a small transverse incision, but we are not convinced that it is one of any real value. Complicated operations for exposure of the scalene muscles and first rib seem to us unnecessary.

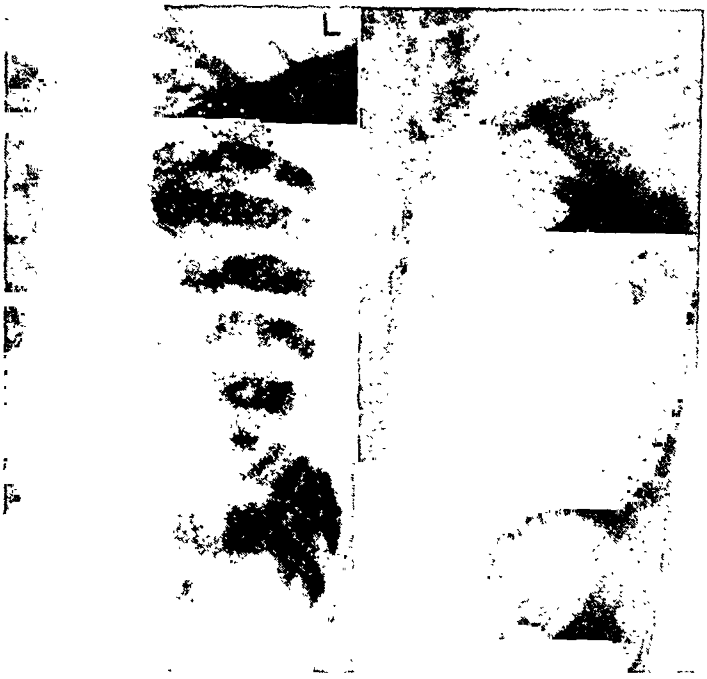

FIG. 3.—Closure of an apical cavity by partial thoracoplasty. The cavity is *situated towards outer part of left lung below the clavicle; there is infiltration of the upper and middle zones of the left lung.* Following a [illegible] *nearly all of ribs 1 to 3, and a length of rib 4)* and appears as a dense streak in the radiogram (right).

There are two main major surgical procedures employed to produce apical collapse. These are very different both in principle and performance. The one consists in the introduction within the ribs, and outside the parietal pleura, of foreign substances to compress and immobilise the lung. This procedure goes by many names, such as extrapleural pneumolysis, apicolysis, plombage, or, on the Continent, Plombierung. For the sake of uniformity we shall refer to it as extrapleural pneumolysis. The second method consists of a partial and specialised form of upper paravertebral thoracoplasty. It is not always easy to foretell which of these two methods will be more effective in any particular case.

1. The first method of *Extrapleural Pneumolysis* is usually done entirely from the front, and is therefore more likely to be effective if the cavities are nearer the front than the back of the apex. No ribs are removed, no deformity is produced, and there is very little shock. Moreover, when paraffin wax is introduced, the lung is not only collapsed and immobilised, but actual pressure is exerted over the cavities. On the other hand, in a certain proportion of cases the foreign material introduced is liable to give trouble after some months or even years. It may start to come out of the wound, and after a long period is completely extruded. In spite of this, the benefit of the operation is usually great, and persists even though all the foreign material has come away. More rarely, the foreign material finds its way into a bronchus and is coughed up without undue harm to the patient.

Extrapleural pneumolysis is based upon the fact, originally noticed in the post-mortem room, that when two layers of pleura are densely adherent to each other it is easier to strip the parietal pleura off the deep surface of the ribs than to separate the two layers of pleura from each other; the lung is far less likely to be torn if this is done. The procedure therefore consists in stripping the parietal pleura off the ribs, in the plane of the endothoracic fascia, for the required distance over the apex. This can be done from behind after the removal of one or two ribs, but the exposure is not good and the amount of stripping and wax introduction which is possible is small. A far better way of doing the operation is to do it from in front without taking out a rib at all. This was first performed in this country by one of us (W. H. C. R.) about fifteen years ago.

For this operation the patient is laid on his back and the upper thorax is slightly arched over a raised bar on the table. A long transverse incision is made from the sternal edge to the anterior axillary border between ribs 2 and 3, or, if preferred, between ribs 1 and 2. The fibres of the pectoralis major muscle are split along the line of the incision and the intercostal space exposed. The intercostal muscles are carefully incised down to the level of the parietal pleura which must be exposed without being damaged. At this stage it may be necessary to introduce some form of rib-spreader, but this is hardly ever required, and if used is liable to tear the pleura. With great care the pleura is then pushed off the deep surface of the ribs, and the dissection is carried up to the apex, along the front and sides of the lung and over to the back of the lung for as wide an area as may be required. The whole apex and upper part of the lung can then be displaced downwards and centrally, leaving a large extrapleural cavity. The problem then arises as how to fill this space with some substance which will maintain the collapse of the lung.

We have made many experiments during the last fifteen years as to what is the best substance to employ for filling the extrapleural cavity. The pectoralis major muscle can be used, but it is usually not big enough or long enough, and besides it soon atrophies. If a suitable lipoma can be obtained at the appropriate time from an operation on a patient with a negative Wassermann, this can be used with advantage, but these tumours are not easy to come by when required. We have sewn up the incision with an air-tight suture, and filled the extrapleural space with gas, thus creating an extrapleural pneumothorax, but the gas was exceedingly rapidly absorbed from the raw surfaces of the cavity and surgical emphysema was a very common sequel. We have also inserted a rubber balloon into the cavity and subsequently blown it up before the wound was closed; this produced excellent immobilisation and collapse, while it was in position, but it could not be left in indefinitely as the air was liable to leak out and the rubber to perish. It was found that, in the majority of cases, paraffin wax was the best substance to use. This can be had at any melting-point required, and we generally employ it at a melting-point of about 55° C. It is sterilised and kept hot and liquid at the time of operation; then when required it is poured into a basin of cold sterile water. It sets quickly into a pliable jelly, which can be moulded and forced into every crack and cranny of the cavity. After the cavity has been completely filled the wound is sutured as carefully as possible without drainage. Care should be taken that the paraffin does not soil the edges of the muscle or skin, since this may interfere with healing. Healing by first intention is almost the invariable rule though, as we have already said, there is an occasional tendency for the wax to come out after some months (Fig. 2).

In one instance a large lump of wax slipped down within the ribs and found its way into unobliterated pleural sac at the base of the lung. This did not seem to do any great harm, and the result was still quite good. One conspicuous advantage that this operation possesses over all others lies in the fact that, in addition to obtaining collapse of lung, actual pressure is also exercised.

2. *Apical Thoracoplasty.*—The alternative operation to wax implantation is sometimes known as an apical or partial upper thoracoplasty. The nomenclature has unfortunately become rather confused by certain authorities also referring to this as apicolysis—a term which we prefer to reserve for the previous operation.

In principle the procedure is very similar to the upper half of the ordinary total paravertebral thoracoplasty; but more attention is paid to the first and second ribs from which considerably longer lengths are removed. The number of ribs that have to be removed depends entirely upon the size and situation of the cavities. It is probably never sufficient to remove the first rib only, and usually we remove good lengths of the upper three or four ribs, though occasionally five or six may be necessary. It is important to take away enough rib to get well below the lower limit of the cavity as shown in the X ray picture, while the abrupt nature of the collapse at the lower limit is eased, and the patient made more comfortable by excision of short lengths of a rib or two below; this gives the collapse a graded effect. This operation, properly performed, will produce practically complete collapse of the apex with little or no visible deformity. The collapse can be rendered even more effective by the addition of a certain amount of extrapleural pneumolysis, which can be simply carried out by blunt dissection after ribs have been removed.

The operation can be performed through an incision in the axilla, or through a high posterior J-shaped incision. We much prefer the latter method, and make a practice of freeing the scapula and carrying it well forward so as to ensure good exposure of the upper ribs. The whole of the first rib as far forwards as its cartilage should be removed in every case. This apparently difficult manœuvre is simplified by means of a special first rib elevator, and by a special method of stripping the rib from the highly important and easily damaged structures that lie in close relationship with it. The problem of freeing the first rib with safety is, in fact, rather similar to that of elevating the dura mater from the base of the skull in approaching the Gasserian ganglion and fifth nerve-root.

There are several methods of approach to the first rib, such as those suggested by Lauwers and Graf, but we have found the preceding by far the most simple, and one in which as small or as large an operation as required may be performed (Fig. 3).

STERILITY AND PSYCHONEUROSES FOLLOWING LUMBAR SYMPATHECTOMY

By Arthur F. Hurst, M.D. Oxon., F.R.C.P. Lond.
SENIOR PHYSICIAN TO GUY'S HOSPITAL

Lumbar sympathectomy is an operation which is undoubtedly of value in the treatment of certain vascular disorders affecting the legs and of intractable pelvic pain. In the last few years it has been performed with increasing frequency for megacolon, including Hirschsprung's disease, although, as I have shown in a paper in the *Guy's Hospital Reports* for July, 1934, it is very doubtful whether it can accomplish anything which cannot be attained by non-operative measures. It has also frequently been performed for constipation, though I have not seen a single case in the last twenty years in which medical treatment has proved sufficiently unsuccessful to warrant the performance of an operation of any kind. As an example of how recklessly the operation is sometimes undertaken, I may quote from a recent paper by S. H. Harris on renal sympathectomy. After saying very properly that "there is ample evidence to prove that the indiscriminate use of renal sympathectomy merits nothing but condemnation," he adds that in certain cases, when constipation is prominently associated with the renal disorder, "lumbar ramisection may be advantageously performed through the same incision," as "it adds only a very few minutes to the time of the operation." Lastly lumbar sympathectomy shows signs of replacing appendicectomy as the operation performed by the unwise surgeon who does not like to close the abdomen without doing anything if he finds no organic disease at an exploratory laparotomy.

The object of this paper is to make it more widely known that abdominal sympathectomy invariably leads to one serious complication in men. Time will show whether any other undesirable sequelæ may occur.

The first reference to the effect of sympathectomy on the sexual functions appeared in a paper by Learmonth in *Brain* (1931) on the Neurophysiology of the Urinary Bladder in Man. He showed that when the presacral nerve is stimulated a cloud of seminal fluid and prostatic secretion is poured into the prostatic urethra as a result of contraction of the seminal vesicles, ejaculatory ducts, and muscular septa of the prostatic gland. Consequently sympathetic neurectomy in males results in the abolition of ejaculation, although the sexual act is otherwise normal and the psychological orgasm is unaffected. In the following year, in a communication on the Innervation of the Bladder to the neurological section of the Royal Society of Medicine, he again referred to these observations and added that male patients must obviously be warned before operation that it will be followed by sterility although not by impotence. Lastly, in a paper on the Surgeon and Pain in the *British Medical Journal* for Jan. 12th of this year, he remarks that the only really undesirable sequel of presacral neurectomy is sterility, and adds that fortunately it appears to have no effect on the sexual functions of women. As, however, most of the females upon whom the operation has hitherto been performed have been elderly women in whom the sexual functions are already in abeyance, it is still possible that these functions may be seriously impaired if the operation is performed in girls and young women; that fortunately Hirschsprung's disease is very rare among the former, though megacolon is not uncommon among the latter. The only other reference to sterility following sympathectomy which I have been able to find is in a paper by Paterson Ross (1934) on Prognosis of Raynaud's Disease, in which he states that after bilateral lumbar gangliectomy male patients, though still potent, are likely to become sterile.

Only those surgeons who read either *Brain* or the transactions of the neurological section of the Royal Society of Medicine may happen to have seen the two casual references to the subject in Learmonth's paper on the Surgeon and Pain, and Paterson Ross's on the Prognosis of Raynaud's Disease; they are likely to be still ignorant of this important sequel of the operation.

It is clear that lumbar sympathectomy should only be performed in males when a condition is present which is likely to receive sufficient benefit to compensate for the unavoidable sterility which will develop. I doubt whether it is ever justifiable in boys with Hirschsprung's disease. In the eight cases I have seen since the war non-surgical treatment led to improvement just as great as that claimed for sympathectomy. It is certainly a very serious thing to sterilise a boy, even with his parents' consent. Whether the Statute of Limitations will protect a surgeon when a sterilised boy, whose parents were not warned, reaches adult life is an interesting medico-legal question. There can be no doubt that the operation should never be performed on an adult male without his written consent after he has been told of the effect it will have on his sexual functions. If he knows what to expect he is also very unlikely to develop psychoneurotic symptoms as a result of the loss of emission, as his enjoyment of the sexual act will remain unimpaired and, if he already has as many children as he wanted, he may regard the operation as incidentally affording a safe means of contraception.

I have seen two cases in which the impairment in sexual functions following lumbar sympathectomy in men was followed by serious psychoneurotic symptoms.

CASE 1.—A mechanic, aged 47, had a left lumbar sympathectomy performed in September, 1933, followed six weeks later by a similar operation on the right side for bilateral thrombo-angiitis obliterans, which had been giving rise to intermittent claudication for six years in the left leg and one year in the right. Some improvement in the condition of the legs ensued. When he returned home after the operation he noticed that he was unable to get an emission, though his sexual functions were otherwise normal. He was much worried about this, and was still more upset when for the first time, on March 15th, 1934, apparently as a result of over-anxiety, he failed even to get a satisfactory erection. A severe headache developed, which had disappeared by the following morning. It returned at midday in an aggravated form, and half an hour later he became dizzy with blurred vision. He had been unable to eat his lunch owing to extreme dryness of his mouth. At 3 P.M. he lapsed into what he described as unconsciousness, but during this time he was very abusive to his wife. He regained consciousness an hour later, but still had blurred vision. The eyes of his wife and friends seemed like balls of fire, and he had lost the use of his hands and forearms. At 7 P.M. he went to sleep and woke two hours later quite normal. He was taken to hospital, but was found to have no abnormal physical signs apart from those due to his arterial disease. The attack was regarded as hysterical; he was reassured and discharged on April 14th.

He remained free from attacks until August, when he had one similar to the first. In October he had a third attack in every way like the other two, except that it was accompanied by a homicidal attack on his wife, whereas before he had merely been abusive. He was placed in a mental observation ward, where he remained quiet and mentally clear.

As the patient had never had any symptoms pointing to nervous instability before he discovered that he could not complete the sexual act with the normal ejaculation, it seems extremely probable that the attacks were purely psychogenic, and were a direct result of the impairment in his sexual activity resulting from the sympathectomy.

CASE 2.—A man of 45, married, with three children, had had since childhood abdominal symptoms which were probably the result of a megacolon, though that was not recognised until 1931. For several years he had had an anxiety neurosis for which he had recently undergone a course of psychotherapy. Lumbar sympathectomy was performed in 1932. From that time he found that the sexual act terminated without the occurrence of emission. He became extremely worried about this and thought that he was "losing his manhood." His anxiety symptoms, which had been troublesome enough before, became greatly exaggerated. Unfortunately, also, the operation had failed to produce any improvement in his abdominal symptoms. When it was explained to him that the loss of ejaculatory power was a natural result of the sympathectomy, although this had not been known at the time the operation was performed, he was greatly relieved. It was not the absence of emission which had worried him, as he had as many children as he wished for and sexual desire was unaffected. But the fear that the loss signified some serious change in his nervous system had become an obsession, which was at once removed when he realised that the cause was physical and not psychological.

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LEPTOSPIRAL JAUNDICE AMONG SEWER-WORKERS

BY J. M. ALSTON, M.B., M.R.C.P. Edin.
AND OTHERS

(From Hospitals and Group Laboratories of the Public Health Department, London County Council)

IN July, 1934, there was published an account by Dr. W. Hamilton Fairley[1] of a fatal infection of leptospiral jaundice in a sewer-worker in London, and in the same publication a report was given of serum agglutination reactions which indicated that eight sewer-workers who had previously suffered from jaundice had been infected by *Leptospira icterohæmorrhagiæ.* Since the time of this paper five more London sewer-workers are known to have suffered from jaundice which has been shown either conclusively or circumstantially to be due to the same micro-organism. The present report deals with three of these cases, and also describes the isolation of virulent *L. icterohæmorrhagiæ* from slime in London sewers.

The First Case

The clinical notes have been supplied by Dr. P. J. Watkin (Lambeth Hospital).

A. B., a man aged 52, was admitted to Lambeth Hospital (L.C.C.) on July 3rd, 1934. He had been employed intermittently during the previous five years as a flusher in sewers.

The *history* was that he had had pains in the legs for a week before admission, and had been jaundiced for the last four days of that period. There had been during this time occasional vomiting of chocolate-coloured material, in attacks which were sudden and severe. The urine had been dark and the motions clay-coloured but without obvious blood. There had been great loss of appetite, and the patient had sometimes felt very faint. There had been no similar illness previously.

On *admission* the skin and scleræ were deeply jaundiced and the tongue dry and coated. The liver was not enlarged and no ascites nor abdominal tenderness were detected. There was slight pulmonary emphysema, and the heart sounds were indistinct and the rhythm tic-tac. The pupils reacted sluggishly to light and the knee-jerks could not be elicited. Nothing abnormal could be found in the muscles of the calves where pain was complained of.

The *progress* of the case from the time of admission was of gradual and general improvement with decrease of the jaundice, and during the early part of convalescence the patient was extremely weak. Except for a small rise of temperature to an average of 99·6° F. from July 11th to 14th, the course of the illness in hospital was remarkably afebrile.

On July 6th and 10th occult blood was found in the fæces, but on the 13th this reaction was negative, and the van den Bergh test with the blood-serum was of the prompt biphasic type. The result of blood count on July 13th was :—

Red cells ..	2,440,000 per c.mm.	Polymorph	84 %
White cells ..	15,400 ,,	Lymphocytes ..	12 %
Hæmoglobin ..	50 %	Monocytes	4 %
Colour-index ..	1·0		

The appearance of the red blood corpuscles was normal except for slight anisocytosis, and the average corpuscular diameter was 0·8 μ. In the urine bile was present at first, and albumin was detectable in small amount from the time of admission until August 15th.

By August 22nd the jaundice had almost entirely disappeared, and on Sept. 7th the patient was fit enough to leave hospital. He weighed on admission 9 st. 4 lb. and on discharge 10 st. 13 lb.

For *treatment* two doses of novarsenobillon had been given—0·35 g. on July 10th and 0·6 g. on July 16th. Aspirin and a mixture containing potassium citrate were also prescribed.

BACTERIOLOGY

Bacteriological investigations were performed at Lambeth Group Laboratory (Dr. J. A. Braxton Hicks) and Archway Group Laboratory (Dr. Alston).

On July 9th a microscopical examination, by dark-ground illumination, was made of the deposit of urine after centrifuging, and several immobile distorted spiral bodies were seen which were suspected of being leptospira. A large amount of this deposit was injected into the peritoneal cavity of a guinea-pig, which died 11 days later and then showed generalised jaundice and numerous hæmorrhages in the subcutaneous tissues and internal organs. Actively motile leptospira were seen in a specimen of the blood examined by dark-ground illumination and the organism was obtained in pure culture in Noguchi-Wenyon medium. In a specimen of blood taken from the patient on July 9th and in urine and blood obtained on the 16th, no evidence of leptospira was found microscopically or by animal inoculation.

Serum of blood obtained on July 9th and 16th was examined by Major H. C. Brown at the Wellcome Research Institute, and he found that both specimens gave a strongly positive adhesion test[2] with a London human strain (Jackson) of *L. icterohæmorrhagiæ*, indicating that the serum contained antibodies specific to that organism. It may be noted that very recently[3] the adhesion test has been correlated with and found equally sensitive to the agglutination test described by Prof. Schüffner.[4]

The Second Case

The clinical notes have been supplied by Dr. J. H. Simmons (St. Alfege's Hospital).

C. D., a man aged 35, was admitted to St. Alfege's Hospital (L.C.C.) on July 11th, 1934. He had been employed for three years as a flusher in sewers.

The *history* of the case was that on July 6th, five days before admission, the illness had begun suddenly—like "influenza"—with pains which started in the lower limbs and gradually extended upwards to the abdomen and between the shoulder-blades. The onset was so sudden that it could be referred to a particular moment while the patient was riding his bicycle. On the following day he had some lower abdominal pain and began to vomit. The vomiting was severe, and the material vomited was dark and may have contained blood. There was no other site of hæmorrhage. Jaundice was noticed the day before admission to hospital. The patient's health had been previously good except for chronic constipation. So far as he knew he had not recently suffered any abrasion or cut of the skin or a rat-bite. He stated that some of his workmates had been jaundiced, but so far as he knew they had not been ill enough to go to hospital.

On *admission* the patient was a well-developed man with intensely jaundiced skin and conjunctivæ. He was moderately ill, with a temperature of 100° F. and a pulse-rate of 116. The tongue was dry and coated, the gall-bladder tender, the liver not enlarged, and the spleen not palpable. No purpura or petechiæ were present. No pathological state was detectable in the heart or lungs. The urine contained bile-pigment in large quantity, a trace of albumin, and no sugar or acetone. The stools were dark.

The *progress* was that for the first few days the patient suffered from continual vomiting and dehydration, but these conditions were relieved by enemata followed by rectal injections of glucose saline solution. The general condition then improved, and temperature and pulse-rate had returned to normal on the fifth day. The jaundice and presence of bile in the urine took about a fortnight to subside. On the fifth day in hospital a transient erythematous rash was seen, mainly on the limbs. The patient left hospital on August 2nd.

The result of a blood count on July 12th was :—

Red cells ..	5,000,000 per c.mm.	Polymorph	87 %
White cells ..	17,000 ,,	Lymphocytes ..	9 %
Hb.	100 %	Monocytes	4 %
C.I.	1·0		

The blood-urea was 125 mg. per 100 c.cm. on July 12th, 145 mg. on the 14th, and had returned to normal limits by the 19th. The van den Bergh reaction gave an "immediate direct" positive result up to July 19th, and a delayed direct positive result on July 27th and August 8th, the number of units by the indirect reactions was highest—54—on July 14th and was 4 on August 8th.

BACTERIOLOGY

Dr. E. N. Allott (Lewisham Group Laboratory) and Dr. Alston (Archway Group Laboratory) investigated the bacteriology of this case. On July 12th and 23rd the urine was examined for leptospira by dark-ground illumination methods but none was seen. A guinea-pig was injected intraperitoneally on July 12th with the deposit from centrifuged urine, but no evidence of infection was detected. Specimens of blood-serum were obtained on August 4th and Sept. 12th, and both gave a strongly positive reaction in the adhesion test with *L. icterohæmorrhagiæ*; these results were kindly confirmed by Major Brown. In the case of the second specimen, the reaction could be obtained in dilutions of the serum up to 1/160.

The Third Case

The clinical notes have been supplied by Dr. G. C. Pether (St. Charles' Hospital).

E. F., a man aged 52, was admitted to St. Charles' Hospital (L.C.C.) on Nov. 18th, 1934. He had been employed since June, 1934, in relaying sewers for which he worked in very old open trenches, and the sewers contained much slime and silt. He had done tunnelling work before, but not for some years. During October he cut a finger of the left hand on the edge of a broken drain-pipe during employment, and this wound was dressed and he continued working.

Dr. J. Butler, Hammersmith, informs us that on Nov. 11th the patient felt very hot, and on the next day complained of pains all over and severe headache. There was a slight cough and a few bronchial râles, but no other physical signs of disease. The temperature was 102° F. Sodium salicylate was prescribed. On the 13th and 15th the patient had been sleeping badly and the medicine was being vomited, even when diluted. On the 15th a little milk was retained and Medinal grs. 5 was prescribed. The temperature on those days was 99·6° and 99°. On the 17th the urine was dark red with blood, and a little blood was coughed up and the patient complained of itching, and jaundice was probably present. The temperature was 99·2°. On the 18th the patient was jaundiced all over, there was much blood in the urine, and epistaxis and hæmatemesis occurred. The liver was enlarged and the stools were clay-coloured for the first time.

On *admission* delirium and slight twitchings were present and the temperature was 98°. On the 19th the condition was almost the same, the conjunctivæ were much injected, epistaxis had recurred, and blood and bile were detectable in the urine. Blood was vomited, and both altered and fresh blood was present in the stools. The result of a blood count was: red cells 2,670,000; Hb., 50 per cent.; C.I., 0·9; leucocytes, 25,000 (polymorphs 91 per cent.). On the 21st the condition became worse, restlessness and twitchings were more marked, and an estimation of blood-urea showed 480 mg. per 100 c.cm. On the 22nd the patient died.

At the time of admission the patient was questioned about the possibility of contact with rats in the course of his work. He appeared to be sufficiently rational to appreciate the question and denied the likelihood of any such contact. In view however of the severe and unusual symptoms which developed two or three days before death the possibility of leptospiral jaundice was entertained, and a specimen of blood-serum was examined by Major H. C. Brown and the leptospiral adhesion test was found strongly positive. On the result of this test leptospiral antiserum was immediately ordered, but it was not received until after the patient's death.

POST-MORTEM FINDINGS

The following is an account of investigations by Dr. W. G. Barnard (Central Histological Laboratory, Archway Hospital):—

Autopsy.—Dark canary-yellow jaundice of skin and less severe of all serous surfaces; well-nourished, well-developed muscular man. A few small recent abrasions on skin of chest probably due to scratching; laceration of nail of middle finger of left hand extending throughout its length. Pale flabby myocardium. Moderate general and coronary atheroma. Slight broncho-pneumonia, œdema, and congestion of posterior parts and bases of both lungs. Enlarged flabby olive-green liver. Bile-ducts patent. Thin dark-green bile in gall-bladder. Congestion of spleen. Enlarged kidneys with swollen jaundiced cortex and slight hæmorrhage in pelvis beneath capsule and in perirenal fat. Slight hæmorrhage in fatty tissue round both adrenals. A few scattered hæmorrhages in mucosa of stomach and throughout intestines. Pale greenish-brown urine in bladder. A few minute hæmorrhages in mucosa of bladder. Slight diffuse subdural hæmorrhage and a few petechiæ in cortex of œdematous brain. Middle ears and mastoids clean.

Histology.—The following organs were examined histologically: liver, kidney, spleen, adrenal, lung, brain, pituitary, and parathyroid. The sections were stained by Ehrlich's hæmatoxylin and eosin, by van Gieson's method, and liver, kidney, and adrenal sections were stained by Levaditi's method for spirochætes. The macroscopic findings were confirmed. In addition there was an excess of polymorphs in the spleen, and slight fibrosis of the anterior lobe of the pituitary. The changes in the liver and kidney warrant a more detailed description.

In the liver the chief changes consisted of jaundice and degeneration of cells in the central parts of the lobules and in those of the mid-zonal regions. The jaundice was less severe than that expected from the naked-eye appearance, and the degeneration consisted of fatty change and necrosis of scattered individual cells. There were patches of subacute inflammatory infiltration of the interstitial tissue of the kidney, the reaction consisting of plasma cells, lymphocytes, and a few polymorphs. The epithelium of the convoluted tubules was everywhere degenerate, many of the cells contained bile-pigment, and in many tubules there were bile casts.

Comment on autopsy.—Definite spirochætes were not found, but particularly in the kidney and adrenal there were strictures resembling fragmented spirochætes and many granules that might well have been the remains of spirochætes. The slight degree of degeneration and necrosis of the liver, the widespread subacute interstitial infiltration and degeneration of the epithelium of the kidney, together with the severe general jaundice, make up a characteristic picture, and one that is not found in any other disease.

BACTERIOLOGY

Material obtained at autopsy was examined bacteriologically at St. Mary Abbots Group Laboratory (Dr. G. W. Goodhart) and Archway Group Laboratory (Dr. Alston). Blood, urine, and emulsions of liver and kidney tissue in which no leptospira could be seen microscopically were inoculated intraperitoneally each into two guinea-pigs, but no certain evidence of infection, by temperature reaction, clinical signs, or autopsy was obtained in these animals or in others inoculated with their blood and tissues. The patient's blood-serum was found to give a positive adhesion test in dilutions up to 1/160.

Comment on the Cases

Of these three cases the nature of the infection was fully proved in the first, and was made very strongly presumptive in the second by the clinical course and the positive leptospiral adhesion test, and in the third by those features and by the post-mortem findings in addition. In all three cases, also, there was a polymorphonuclear leucocytosis which is constantly found in leptospiral jaundice, and is in contrast with a tendency to leucopenia, and an absolute or relative lymphocytosis which have been observed in epidemic catarrhal jaundice by investigators abroad and in this country.[5]

Two small epidemiological points may be made. Since the fatal case described by Dr. Fairley was of a man who had worked for only three weeks in the sewers, it was thought possible that cases might be found chiefly among the recent recruits to this work, but on investigation the length of service in sewers of the three cases reported above and of other recent cases was of five months to five or more years. Secondly, infection has occurred among both classes of sewer-workmen—building labourers and flushers. The former are much engaged in chiselling out and handling the slime-covered brickwork of the bottom of the sewers from which, as described below, virulent leptospira can be demonstrated, and abrasions of hands often occur. Flushers are not in such close contact with the slime, and obvious skin abrasions are not so frequent. The fact that both types of workers may become infected suggests that the route of infection in some may be by the mucous membranes of the alimentary or respiratory tracts as is believed to occur in persons infected with *L. icterohæmorrhagiæ* after falling into[4] or drinking[6] contaminated water. It may be said that sewer-workers are, in general, instructed to have major abrasions or cuts cleaned and covered, and hot water and soap are provided for them to clean their hands at the end of work and at breaks for food; but in addition to these dangers, there is also the possibility of infection by touching the mouth or nose during work.

Isolation of L. Icterohæmorrhagiæ from Rats and Slime in Sewers

Before the occurrence of the fatal case of leptospiral infection in a sewer-man which was described by

Dr. Fairley, and has already been referred to, it had been decided at the instigation of the Public Health Department, L.C.C., to investigate the possibility that cases of jaundice that had occurred from time to time among sewermen might be due to leptospiral infection. For this purpose some strains of *L. icterohæmorrhagiæ* were isolated from sewer rats and the presence of the organism was sought in sewer slime with which the workmen inevitably come into contact. No effort was made to estimate the proportion of rats caught in sewers from which leptospira could be isolated, because the fact of a varying but often high incidence of infection of rats by the leptospira is known from surveys on rats caught in different situations in several parts of this and other countries; but by the inoculation of guinea-pigs with kidney and liver tissues from rats caught in sewers in eight different parts of London five strains of virulent *L. icterohæmorrhagiæ* were obtained. Four of the strains were obtained by subcutaneous inoculation of guinea-pigs with rat tissues, but in one instance in which intraperitoneal inoculation was used the circumstances of the isolation may be mentioned. In this instance it was thought that a few inactive leptospira were present in a preparation from the rat's kidney examined by dark-ground illumination. A guinea-pig was inoculated intraperitoneally with a suspension of ground kidney tissue and remained alive and apparently well for a period of six weeks and then was killed. No evidence of jaundice, hæmorrhage, or other lesion suggesting leptospiral infection was found at autopsy, and no leptospiras could be seen in preparations of blood, liver, or kidney examined by dark-ground illumination. Another guinea-pig was inoculated subcutaneously with the tissues of the first and it died thirteen days later showing jaundice of the subcutaneous tissues and hæmorrhages in the thoracic and abdominal organs—a typical picture of leptospiral infection. The demonstration of leptospira in the blood and tissues by dark-ground illumination was doubtful, but a pure culture of these organisms was obtained from the blood by inoculation of Noguchi-Wenyon medium.

By a similar technique of inoculating guinea-pigs by subcutaneous injection or by scarification, pathogenic leptospira were demonstrated in a specimen of slime from the floor of a sewer near the spot where Dr. Fairley's patient had been working immediately before his fatal infection, and in another specimen from the outlet of a house-drain into a different sewer. It is worthy of note that in the case of each of these specimens, only one out of two guinea-pigs inoculated in the same way and at the same time succumbed or showed any evidence of infection. Twenty-eight similar specimens of slime from the floor or lower part of the walls of the sewers or from the outlets of drains produced no sign of infection in the animals inoculated with them, and six specimens of the small slimy stalactites which form on the roof and contain chiefly gritty material from the cement of the brickwork did not give rise to any evidence of infection in guinea-pigs. This isolation of virulent leptospira from sewers recalls the isolation of the same organism from slime in a coal-mine recorded several years ago.[7]

In the inoculation experiments described young guinea-pigs of about 300 g. weight were used, but as has just been noted they were clearly unequal in susceptibility to infection by the same route, even although temperature records were not taken for detecting slight non-fatal reactions. In isolating the leptospira from both slime and rat tissues in which the leptospira were probably very scanty, inoculation by subcutaneous injection or, as maintained by C. C. Okell, by rubbing inoculum into scarified skin surface was found more effective than intraperitoneal injection with guinea-pigs of the size used (300 g.), which was the smallest available.

Acknowledgments are made to Dr. P. J. Watkin, Dr. W. D. Wiggins, and Dr. B. Hood, medical superintendents of, respectively, Lambeth, St. Alfege's and St. Charles' Hospitals for permission to publish notes of the cases. Thanks are given to Mr. S. J. Denyer, senior technician at Archway Group Laboratory for assistance.

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Clinical and Laboratory Notes

A CHAPTER OF ACCIDENTS IN A CASE OF KALA-AZAR

By A. Piney, M.D. Birm., M.R.C.P. Lond.

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There is a modern prejudice against the publication of single cases, but there are occasions when a patient presents so many points of interest that it is improbable that a series of similar observations could ever be collected. In the present case there was such a concatenation of accidents as is never likely to be repeated.

Mrs. A., aged 39, whom I saw at the request of Major J. R. Yourell, R.A.M.C. (ret.), had been in India in 1929 and again in 1932. During her stay there she had not suffered from any disability other than slight concussion, due to a fall from her horse. When I saw her on July 29th, 1934, she said that she had been feeling unwell for about twelve months, and that she had had an almost persistent evening temperature in the region of 100·6° F. For a time she had been treated for colitis, and in April, 1934, there had been some argument about the palpability of her spleen, but this discussion was stopped because she apparently developed an acute cholecystitis, which was operated on by Mr. E. K. Martin, who found only a distended gall-bladder with no signs of calculus or infection. She was gravely ill but recovered relatively rapidly, although the evening rise of temperature persisted.

When I saw her she was extremely pale; there were a few pigmented patches on the inner sides of the arms; the spleen was firm and slightly tender, extending down as far as the umbilicus. The liver was also enlarged, extending three fingers-breadth below the costal margin. The blood showed:—

Red corpuscles	2,300,000 per c.mm.	Neutrophils ..	70 %
Leucocytes ..	2,000 „ „	Monocytes ..	20 %
Hæmoglobin ..	38 %	Lymphocytes ..	10 %

The clinical and hæmatological characters suggested the possibility of kala-azar, and the patient was seen by Dr. Carmichael Low. A liver puncture was performed, but although many endothelial cells were found in films, no definite Leishman-Donovan bodies were recognised.

Treatment with intravenous Neostibosan was started, and by the end of a week there was distinct decrease in the size of the spleen. On the eighth day there developed great abdominal distension, and enemas, acetylcholine, and Prostigmin failed to cause any improvement. As the condition became definitely worse, Mr. A. L. Abel performed a laparotomy on August 9th, 1934, and found a volvulus of the pelvic colon. At operation there was a small amount of clear fluid in the peritoneum and a peculiar semi-gelatinous thickening of the mesentery. The cæcum was brought to the surface but not opened, as we thought that a "safety valve" might be needed later. She did very well after the operation, although the temperature never settled. At this time there was slight œdema of the ankles. Treatment with neostibosan was continued until 3·0 g. had been given, and on August 29th the spleen was not palpable and the liver did not appear to be enlarged. The œdema of the ankles had slightly increased and, indeed, extended half-way up the calves. The temperature was normal and all looked very promising, especially as the hæmoglobin was now 69 per cent.

On August 10th the temperature started to rise again and œdema of the legs extended right up to the thighs, and at the same time there was much fluid in the abdomen. The next day the right side of the chest was full of fluid, but even so the amount of urine passed was not decreased and there was no albuminuria. The blood-urea level was normal. There was now so much respiratory embarrassment that she was seen by Dr. G. E. Beaumont, at whose suggestion she was given a transfusion and an injection of Salyrgan. It was difficult to find a vein for the transfusion, as so many had been used for the neostibosan and for pre- and post-operative transfusions, but nevertheless it was done. The urine output fell and nothing influenced it. The œdema became enormous, the abdomen was distended with fluid, and both sides of the chest were full. The prognosis seemed hopeless, and this view was confirmed by Lord Horder. So convinced were the nurses of her impending death that the matron of the nursing-home, who was short of space, let my patient's room! In a despairing attempt I injected 5 c.cm. of salyrgan intravenously at a time when the patient was almost unconscious, and within twelve hours she had passed 6 pints of urine and was feeling better. All this time the blood-urea was only slightly raised and there was only the faintest haze of albumin in the urine; casts were absent. She was put on ammonium nitrate and was given several more injections of salyrgan until the œdema had disappeared and she was feeling well; but the temperature never became quite steady, although the evening rise was never above 100°.

For a month all seemed to be going well, although slight œdema of the ankles had recurred. The patient was being kept in the nursing-home only because she was so thin and weak that it was felt better to prolong her stay. Her hæmoglobin was 72 per cent., and her leucocyte count, total and differential, was normal.

Suddenly, exactly one month after her last collapse, she had a violent fit without any prodromata. The nurse was taking her pulse when Mrs. A. cried out, went through a clonic stage into a tonic one, and remained unconscious. I saw her three-quarters of an hour later when she had had two more fits. She was deeply unconscious, and while I was examining her had another seizure, which was a typical epileptiform one. Dr. F. M. R. Walshe kindly saw her in consultation with me within two hours of the first fit and could find no explanation. Soluble Luminal was given, and after three more slight fits in the night no more occurred, although the patient remained unconscious. After 24 hours I did a lumbar puncture; the fluid was not under pressure, was clear, and chemically and cytologically normal. Within two hours there were signs of returning consciousness. No urine was passed for 36 hours, and only 2 oz. could be drawn off by catheter. This was loaded with albumin, but there were only a few hyaline casts present. There was now enormous anasarca, but the blood-urea was never above 50 mg. per 100 c.cm. The blood pressure was 150/100, which was surprising, for it had never been raised before the first fit. The chest was again full of fluid, which, on Dr. F. G. Chandler's advice, was not aspirated.

The signs of returning consciousness were so encouraging that I once more tried salyrgan, giving 3 c.cm. intramuscularly, and in the following 24 hours she passed 296 oz. of urine! By the time she had passed 100 oz. consciousness had returned. And after three more doses of salyrgan all œdema had gone, the blood pressure was normal, and she felt well. But the temperature still ranged between 99° and 101°, and no cause for this could be discovered. So, on purely empirical grounds, I gave her a series of subcutaneous injections of arsenious acid (rising from 1 mg. to 10 mg. and down again), and her temperature became normal and stayed so.

She returned home in time for Christmas, 1934, still being thin and weak on the legs, and still having an extensor plantar reflex on the right side. Since then she has continued to regain strength, the plantar reflex has become normal, and her temperature has not been above 98·4°. Her blood is normal and one may presume that after having been given up three times she is now cured. But what was the nature of her renal lesion is indeed a mystery.

The case seemed to be worthy of record because one so often tries to encourage relatives by saying "while there is life there is hope," but it is rare to meet a case in which this tentative optimism is justified.

MALIGNANT KELOID FOLLOWING VEIN PUNCTURE

BY M. L. KENIG, M.D. Montpellier

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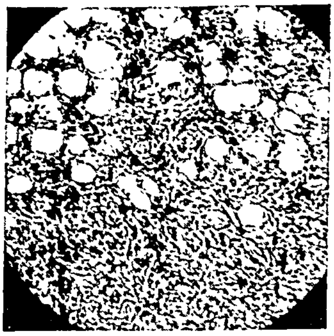
IN 1918 the patient, a healthy male aged 44, had some blood withdrawn from a vein in the antecubital fossa. He remembers that afterwards a bruise persisted for "months," and later a scar could be seen and felt at the place where the needle had penetrated the skin. In 1932 a nodule the size of a pea was first noticed. From 1932 to 1935 more growths developed, and as the application of iodine did not disperse the tumours hospital advice was sought.

On examination three nodules about 20 mm. in diameter were found in the anterior bend of the elbow. There was no discoloration of the skin covering them, and when palpated they were found to be attached to the deep tissue and could not be moved freely one from another. Other smaller deep irregularities were felt. On pressure with a glass slide the skin over the larger nodules became cyanosed. Mr. Cecil Burnham, senior surgeon to the French Hospital, diagnosed the condition as malignant, and decided on operation. On Jan. 9th, 1935, he made an incision wide of the tumours and removed them en masse. A considerable number of large vessels arising from the deep fascia supplied this area, and care was taken to remove all the smaller growths which were spreading from the under surface of the main larger masses. The raw surface of the wound was covered with sterile gauze until Jan. 23rd, when a Thiersch graft was done. It is of interest to note that the graft had completely "taken" within five days, and that except for slight œdema distal to the graft the wound had consolidated a fortnight later, allowing full flexion and extension of the elbow-joint.



A field demonstrating the invasion of fatty tissue by the spindle cells. (Low power magnification.)

The tumours were sent to the laboratory for histological examination, and Dr. H. Schwabacher's report was as follows: "The dorsal surface of an elliptical piece of skin 8 by 5 cm. is rendered uneven by circular elevations varying from 2 to 15 mm. in diameter. On the subcutaneous surface these elevations are seen as oval or round nodules, about fifty in number. They are resistant to the knife, their cut surface is glistening, and they are fused together so that they cannot be dissected one from the other without including fatty tissue and fibrous strands. The section shows a mass of spindle cells spreading in all directions and invading the muscle and fatty tissues. There is no attempt at encapsulation. The individual cell has an oval nucleus which takes up almost the entire breadth of the cell. Only a few mitotic figures can be seen, and the blood is retained within the lumen of the vessels of which the endothelium is intact. The growth has probably arisen from the scar tissue of the venepuncture, and on account of the absence of evidence of great activity it may be regarded as a locally malignant keloid."

I wish to express my thanks to Mr. Burnham for permission to publish this case, and to Dr. Schwabacher for the pathological report.

A CASE OF CANNABIS INDICA INTOXICATION

By E. T. Baker-Bates, M.D. Liverp., M.R.C.P. Lond.

ASSISTANT HONORARY PHYSICIAN, ROYAL SOUTHERN HOSPITAL, LIVERPOOL; REGISTRAR AND PATHOLOGIST, LIVERPOOL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST

Instances of poisoning from Indian hemp grown in England are uncommon; it has been stated [1] indeed that plants grown in this country do not form the active resin and have little or no pharmacological action. The following cases are therefore of toxicological importance.

A young man, having read about Indian hemp in the "Chemistry of Common Life," by J. F. W. Johnston [2] which describes it as "an increaser of pleasure, the exciter of desire, the cementer of friendship, the laughter-mover, and the causer of the reeling gait," separated the hemp seeds from the parrot food and planted them in his garden during June. In September, when the plants were about four or five feet high and flowering, he plucked the leaves and tops, dried and chopped them and made them into cigarettes; these he smoked on several occasions and experienced mild symptoms of cannabis intoxication —e.g., loss of sense of time and space, vivid dreams or hallucinations and subsequent drowsiness.

Incredulous about his experiences, his fiancée, aged 22, smoked—and to some extent inhaled—about two-thirds of a cigarette, made from the top of a fruiting plant. This was at about 10.10 P.M. Soon afterwards she fell asleep and a few minutes later, on being disturbed, she awoke with a start and exhibited apprehension. The eyes were bright, the hands were twitching, and she appeared intoxicated; she asked where she was—probably deceived by hallucinations—but seemed happy. At about 10.25 P.M. she was taken for a short walk, which was interrupted by outbursts of laughter and of affection; her speech became slurred from dryness of the mouth and her gait increasingly unsteady. At 10.30 P.M. she was taken to a doctor and the history explained; he recorded that she was pale, but able to stand and walk although feeling dizzy; she was very excited and talkative and made stiff purposeless movements with her hands; her state was highly emotional, even amorous, towards her companion; at one moment gay, she was next anxious and said she felt "enclosed"; she exaggerated the passage of time and was confused about spatial dimensions; her tongue and mouth felt parched and words were pronounced with difficulty, while sentences lapsed into incoherencies; the eyelids were half closed; the pupils dilated, but reacted to light; the pulse was rapid, but strong.

She was transferred by police ambulance to the casualty department of the Liverpool Stanley Hospital where she arrived at 11 P.M. in a collapsed condition. Her symptoms at that time were loss of power in the legs and inability to stand; dizziness, dryness of the mouth, and palpitation; and lengthened estimation of the passage of time. She believed her condition had lasted many hours and, although fully conscious of her existence, she imagined she was "outside her own body" (a hallucination of dual personality), enclosed in a small space, and surrounded by a mist from which she could not escape. This imaginary mist did not impair her vision for distant objects.

On further examination speech was found to be confused, rambling, and often inarticulate. She was unable to stand steadily or without support, and showed great incoördination in the movements of the hands. There was tachycardia (140 per minute) and also marked inspiratory dyspnœa. No other abnormality was found. Following general treatment for shock the patient recovered in nine hours and there were no sequelæ except severe headache.

These cases are interesting in that they refute the impression that cannabis indica grown in England is devoid of toxic properties and they exhibit the two typical illusions—those of time and space—and the rapid onset following inhalation of the drug of characteristic symptoms which could be divided into three stages—namely, excitation, motor incoördination, and narcosis.

Pharmacologists recognise great variation in the activity of cannabis indica and much difference in the susceptibility of varying races and temperaments to its action. Fatal results are rare. The initial symptoms, which are clearly due to depression of judgment and the critical faculties, are commonly represented by apparent exhilaration of the intellect, associated with—as in normal dreaming—a rapid flow of pleasant and fantastic ideas and illusions resulting in hilarity or demonstrations of affection, and a gross exaggeration of the passage of time as well as an ocular illusion that near objects are at a distance. There may be sexual excitement, but this is dependent on the psychology of the individual. If the action progresses, there will follow sensory impairment and muscular incoördination, and ultimately deep sleep which may be associated with vivid dreams. On awaking there is commonly some lassitude and impairment of mental functions.

Frequent indulgence in cannabis, which is as prevalent as the hashish habit in the East and latterly in Mexico and South America, results in loss of judgment and restraint and is accountable not only for cases where natives "run amok," but also for various types of insanity.

From the medico-legal standpoint this case is interesting, because although the Dangerous Drugs Acts control the purchase of the extract and tincture of cannabis indica, there is no law against the possession of or smoking of the plant. The man could have been proceeded against under the offences against the Persons Act 1861 for giving a drug to another with harmful intent.

The hot summer of 1933 may have been the reason why the seeds grew so well in England. There is a possibility that if the fact that hemp seeds could be grown with ease in England were widely known hemp-smoking might become a national menace. In conclusion I wish to express my gratitude to Prof. Walter Dilling for his interest and advice in this communication.

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2. Johnston, J. F. W.: The Chemistry of Common Life, Edinburgh, 1855, chap. 18.

Children's Hospital, Pendlebury.—The foundation-stone of the Zachary Merton convalescent home, which is to be part of this hospital, has been laid by the Lord Mayor of Manchester. The home will consist of an administrative block with two single-storey wings, each accommodating 20 children.

MEDICAL SOCIETIES

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT a meeting of this society held in the University, Liverpool, on March 22nd, Mr. A. GOUGH, the president, being in the chair, Dr. F. J. BURKE read a paper entitled

"Amniography"

In recent years, he said, it had been found possible to diagnose placenta prævia by means of the X rays. The importance of this discovery was not widely appreciated in spite of the need for improvements in the method of diagnosis. After a brief summary of what had been done by others, Dr. Burke described some of the difficulties and gave the results of 23 cases; in 5 of these X rays showed a placenta prævia. There did not appear to be any gross risk to the mother. Of the 5 neonatal deaths and stillbirths in his series, 4 could be accounted for by natural causes. An injection of uroselectan into the uterus tended to induce labour; he described 27 cases in which it had been used for this purpose. Five abortions were also induced by means of uroselectan, and he discussed the types of cases in which it should prove useful. A large proportion of the drug he had found was excreted by the kidneys.

Dr. C. H. WALSH said that injection of uroselectan into the uterus had the following uses: (1) to show up the fœtus in early pregnancy; (2) to demonstrate the position of the placenta; and (3) to induce abortion or labour. The method was, he added, entirely without risk to the mother and child.—Mr. J. ST. GEORGE WILSON said he had used the method in a few cases but had not been entirely successful because the X ray films were too small.—Prof. MILES PHILLIPS agreed that the method described might be of value in some cases.—Prof. D. DOUGAL asked if the position of the placenta could not be shown by a simple X ray without previous injection of any opaque substance.

Prof. A. LEYLAND ROBINSON and Mr. M. DATNOW described a case of

Vesico-vaginal Fistula

of unknown origin, with a new apparatus for the control of urinary incontinence. The patient was aged 45, a two-para, and had had her last child 15 years previously. She was two years after the menopause and came to the hospital complaining of urinary incontinence of only one month's duration. Examination revealed a large vesico-vaginal fistula about half-way up the anterior vaginal wall. No growth was present. Urinary investigation for tubercle bacilli proved negative and the Wassermann reaction also was negative. Uroselectan injection showed complete absence of function of the right kidney with hydronephrosis on the left side. The left ureter was dilated in its whole length. Operation failed to close the fistula. The speakers demonstrated the apparatus which the patient had found very satisfactory for controlling her urinary incontinence. They had also inserted the instrument in other cases with satisfactory results. It consisted in the main of a ring pessary with a diaphragm to which was vulcanised a rubber catheter whose end was inserted into a bag that was worn on the patient's leg. The instrument has to be removed and cleansed each week.

Miss G. GRIFFITH described a case of

Complete Avulsion of the Uterus

during an attempt at manual removal of the placenta. The patient was delivered by forceps of a stillborn infant. No difficulty was encountered. The prac tioner attempted to express the placenta and th decided to remove it manually because of the excessi bleeding. On removing her hand from the vagi she found to her amazement that it was the ute which she held in her grasp. After admission hospital and treatment for shock, laparotomy w performed and the peritoneum sutured. Miss Griff demonstrated the specimen.

Prof. DOUGAL described a case which was report to the Obstetrical Society and said that very lit force was required to avulse the uterus.—Prof. MI PHILLIPS had collected 36 cases of avulsion, 15 whom had recovered. There was little or even force needed to be used for removing the uterus. these cases there could be no doubt that more or l complete separation of the uterus from the vagi occurred spontaneously. In other cases there w evidence of varying degrees of violence.

Mr. T. N. A. JEFFCOATE described a case of

Hydatidiform Mole

with negative Aschheim-Zondek reaction. He dr attention to the fact that undue enlargement of t uterus was not an invariable accompaniment hydatidiform mole, and his case was an example this. The test carried out with the urine in t patient gave a negative result. This was, he thoug due to the fact that the mole was dead and t chorionic elements inactive.

The PRESIDENT described a case of typical hy tidiform mole in which the test had been negative some unexplained reason. He suggested the pos bility that the urine in some cases of hydatidifo mole contained so much hormone that the test anim did not show any reaction unless the urine w diluted first.—Prof. MILES PHILLIPS said it had be brought to the notice of the society by Prof. Brig that in many cases of hydatidiform mole the uter was smaller than expected.

Cases of specimens were also described at t meeting by Mr. N. L. EDWARDS, Dr. A. A. GEMME Dr. V. J. WOODWARD.

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the section of obstetrics held the Royal College of Physicians on Feb. 8th, t president, Dr. T. M. HEALY, being in the chair, Dr. DAVIDSON, Master of the Rotunda related a case of

Dystocia due to Cyst of the Broad Ligament

Obstructed labour due to ovarian cysts was, he sa comparatively rare and difficulty due to parovari cyst was rarer still. The patient was 34 years age, in her sixth pregnancy, and had had 5 full-te children. Labour commenced at 11 A.M. and t membranes ruptured at 5.30 P.M. She was seen two post-graduates from the hospital who diagnos an ovarian cyst obstructing labour and had her remov to hospital. Shortly after admission Dr. Davids examined her and found her to be in good labou on abdominal palpation the head was presenti and well pushed over to the left side of the pelv brim, showing no attempt to enter the brim. vaginal examination the os was 4 fingers dilated a pushed towards the left lateral fornix; the membran were ruptured and the head could be felt free abo the brim. The right lateral fornix was occupi by a tense cystic swelling the size of a grape-fru which appeared to be fixed to the pelvic wall and could not be dislodged. The uterine vessels could be felt pulsating across the vaginal aspect of the tumour. Pressure on the tumour caused the patient to complain of pain running down her right leg and finally localised in the dorsum of the right foot. The same pain was felt on abdominal palpation and she had noticed it during the latter part of pregnancy, with occasional swelling of the right leg.

It was obvious that vaginal delivery could not take place under the existing conditions. When the abdomen was opened palpation revealed a cystic tumour lying extraperitoneally in the lateral fossa and attached to the lateral and posterior aspects of the pelvic wall. Both ovaries were normal. A lower segment section was performed and a living child was extracted. The incision in the uterus was complicated by very free venous bleeding. After the placenta was removed, and the uterine incision closed, the relationships of the tumour were investigated through the peritoneal incision. The ureter was felt coursing along the superior and lateral aspect of the tumour and the tumour itself was found to be of a cystic character, fairly firmly attached to the floor and the lateral and posterior walls of the pelvis. It would have been possible to have separated it, but it was felt that the amount of hæmorrhage and the difficulties entailed contra-indicated its immediate removal. It was apparently a broad ligament cyst which had extended out from between the layers of the broad ligament. The kidneys were normal.

Dr. F. Doyle asked what would be the right course if such a tumour was found earlier in pregnancy. It was, he thought, always best in such cases to be as conservative as possible.

Dr. O'Donel Browne said the fact of the fixation of the tumour was crucial. If the tumour was fixed, it ruled out the possibility of being able to push it up; if any effort were made at forcible delivery, the tumour might prove to be a dermoid and burst. It was difficult to know what a country practitioner could do in a similar case. In the case of a patient with threatened rupture, the child alive, and the cervix fully dilated, he himself would have done a version. Such tumours used to be drained through the rectum; and according to old text-books this treatment seemed to do well.

Dr. R. V. Dowse referred to a case in which tumour complicated pregnancy. The patient, a primipara, was six months pregnant. She had a fibroid so sensitive that she could not bear her abdomen touched. It was removed and the patient went to term.

Dr. Davidson in reply said that the patient had her last child three years previously; she had had no difficulty with previous confinements. If the cyst was present at all three years previously, it must have been very small; in the early stage of pregnancy it would probably not have been big enough to be felt. In one case of fibroids in pregnancy he had operated when the patient was about five months pregnant and removed large interstitial fibroids. There was severe haemorrhage, the cavity was only closed with much difficulty, and the patient miscarried. In another case he had removed subperitoneal fibroids and the patient did well. If fibroids were present in the upper part of the uterus and were interstitial or non-pedunculated he thought they should be left alone. In other cases they should only, he thought, be touched if their removal would save the patient from a Cæsarean section. In the present case he did not think that any type of vaginal delivery would have been satisfactory; the cyst was very tense, and any attempt at vaginal delivery would almost certainly have ruptured it. He hoped in about six months' time to be able to remove the tumour.

At a meeting of the section held on March 8th Dr. W. R. Collis read a paper on

Premature Infants and their Management

The difficulty of maintaining the body temperature of these children had, he said, been largely overcome at the Rotunda by the administration of thyroid extract. It was very difficult to keep the temperature up by external means only. The babies were nursed in electrically heated cots, the nursery itself being kept at ordinary room temperature as it was found that high temperatures interfered with the efficiency of the nursing staff. Weight curves showed that the babies on thyroid extract compared well with the control babies treated without it.

The President said that most obstetricians realised they had not been doing enough for babies when they were very small. Dr. Collis had mentioned that nurses did not even take the temperatures of babies when they were premature; they concentrated all their attention on the mothers. The results following the administration of thyroid were impressive and future results might be even better. He deprecated wrapping up the babies in gamgee tissue; it did not keep them particularly warm, and warmth was essential.

Dr. Davidson confirmed the results gained by the administration of thyroid extract. One of the most important changes which had recently taken place in the Rotunda Hospital was the appointment of a staff nurse for the nursery.

Dr. Bethel Solomons said that nursing was the most important part of treatment in prematurity; he had always taught that heat and fluids were the keynotes of success. Thyroid extract seemed to be an excellent adjunct in producing heat. Babies of three pounds and upwards survived with good treatment. In Holland the urine of pregnant women was being used in the treatment of premature infants as the readiest way of obtaining hormones.

Dr. Dorothy Price said that Dr. Collis had revolutionised in Dublin the treatment of premature babies. It was a great advantage to the pædiatrician to see the babies in the Rotunda immediately after they were born, before they had had a chance of picking up any germs.

Dr. Colman Saunders said the chief difficulty about premature babies was their feeding. The gastric mortality was very high. Thyroid, he thought, probably acted by increasing the gastric and intestinal resistance. It was however very difficult to give enough to be really effective. The temperature should be taken from the moment the baby was born; it might be too late when it was found that the temperature was going down. He thought any baby under five pounds when born should be treated as premature.

Dr. Collis in replying said he did not like gamgee tissue for these babies; it was much better after they had been impregnated with oil to wrap them in a woolly shawl. He quite agreed with Dr. Davidson that the chief credit for the good work in the nursery was due to the staff nurse. These babies were always very anæmic, and many of them would die unless they were very well looked after. It was often extremely difficult to get them to take any food at all; it was often necessary to put it in with a tube. Carefully done this would not start bad diarrhœa. In Germany there was a regular trade in breast [illegible]

REVIEWS AND NOTICES OF BOOKS

Respiration

New edition. By J. S. HALDANE, C.H., M.D., F.R.S., Fellow of New College, Oxford; Hon. Professor of Birmingham University; and J. G. PRIESTLEY, M.C., D.M., Reader in Clinical Physiology in the University of Oxford Oxford: Clarendon Press; London: Humphrey Milford. 1935. Pp. 493. 30*s*.

THIS new edition of Prof. Haldane's well-known work on respiration is a welcome addition to physiological literature. The subject is treated exhaustively from beginning to end in all its bearings. An historical account is given of the development of ideas on the control of breathing and the respiratory function of the blood, while the greater part of the book is devoted to consideration of respiration in its widest sense in relation to the economy of the whole organism. The sections on the effects of high and low atmospheric pressures make fascinating as well as instructive reading, and are beautifully illustrated. From a practical point of view the main message of the book hinges round the problem of anoxæmia; indeed, the authors say: "If there were only one clinical lesson derived from a perusal of this book, it is to be hoped it would be that anoxæmia is a very serious condition, the continuance of which ought to be prevented if at all possible." Many of the apparently specific effects of carbon monoxide, for instance, have been shown to be really due to the effects on the tissues of prolonged—sometimes unnecessarily prolonged—partial deprivation of oxygen. The last chapter, on air of abnormal composition, treats of a variety of subjects, including ventilation, ordinary lighting gas, air in mines, air containing particulate matter, and air in wells and tunnels and ships.

From the scientific point of view the approach to the subject is epitomised in this sentence, taken from the preface: "Respiration is thus only an aspect of the coördinated and maintained phenomena which we call life." In working out the details of respiratory processes, the authors never lose sight of the organism as a whole, and they regard the integration and coördination of such details as a fundamental conception which must be accepted and which may be used for purposes of prediction. There is no doubt that the philosophical outlook which Prof. Haldane has championed for so many years is implicitly, if not explicitly, becoming more and more acceptable to physiologists. Perhaps most of them would subscribe to the idea that even if the body could be completely presented as a series of physico-chemical mechanisms, their coördination and maintenance would still represent a peculiar and characteristic type of activity which we could only describe by a unifying term such as life. This is probably an understatement of Prof. Haldane's case, but it is clear that we must at some stage take for granted the existence of a unifying factor. Too much importance is often attached to the fact that Prof. Haldane's belief in oxygen secretion by the lungs is not accepted by several other workers. The question of oxygen secretion is one of evidence, and the most that can be said here is that the evidence is conflicting, and that in this book very cogent arguments have been adduced in support of the contention that it does occur; if this contention should be proved incorrect, however, the main thesis of the work would not be invalidated. Apart from this chapter, which deals a little one-sidedly with a controversial point, the book is authoritative in every respect, and it is safe to say that no other authors could have combined so well the theoretical and practical aspects of their most important subject.

Medicine

Essentials for Practitioners and Students. Second edition. By G. E. BEAUMONT, D.M., F.R.C.P., Physician with charge of Out-patients, Middlesex Hospital. London: J. and A. Churchill Ltd. 1934. Pp. 746. 21*s*.

THE bold venture of producing a small text-book of medicine to compete with so many bigger rivals has achieved a deserved success. It is indeed the compact nature of this work which is partly at least responsible for its popularity, for it includes all the essentials of medicine in small bulk. Moreover, its price is very reasonable, and it is well illustrated and beautifully printed on excellent paper. To read a book containing such a wealth of compressed information is not easy work, but this is a defect which can hardly be avoided. A difficult subject like nephritis, for example, cannot be clearly expounded in a short essay; the student is likely to feel almost as puzzled after reading this section as before, and even the experienced practitioner may not feel quite sure of his ability to differentiate the types in which a raised blood-urea is to be expected, or in which urea should be ordered as a diuretic. Similarly the classification of jaundice may well alarm those meeting it for the first time. These are however criticisms which are equally applicable to larger works, and it is only because conciseness and simplicity must be the two important standards in judging the smaller text-book of medicine that they are mentioned here. Dr. Beaumont has combined the new and the old in medicine and managed to shake off much that needed eliminating. He shows common sense everywhere, and his emphasis on clinical aspects of medicine is welcome in a text-book of this sort. In this edition a number of minor alterations and additions have been made, and the book is now wonderfully up to date and complete for its size.

Practitioner's Library of Medicine and Surgery

Vol. VII. *Pediatrics.* Associate editor: DANIEL C. DARROW, B.A., M.D., Assistant Professor of Pediatrics, Yale University Medical School. London: D. Appleton Century Co. 1935. Pp. 1211. 50*s*. per volume. (Volumes not sold separately).

THE presentation of an up-to-date and inclusive exposition of the practice of pædiatrics as part of a system of medicine and surgery involves a certain amount of overlapping with other sections of the general work. Many infective diseases affect adults in much the same manner as they do children, and for this reason the editors have stressed rather the nutritional factors of disease in childhood, and such conditions as tuberculosis in which there may be considerable differences in kind between the adult and childhood type of infection.

The editor courageously prefaces the volume with the statement that the "great morass of speculative matter has been 'debunked'; opinion has been superseded by established facts." The process of debunking, however, has been put into 34 different hands, and their efforts are by no means equally successful. Indeed, we suspect that some of them have found it very much like debunking the hydra—no sooner is one head amputated than another takes its place. But the whole subject has been approached in a spirit free from traditional shibboleths, and the result is a work which is thoroughly alive. Pædiatricians in this country will welcome a symposium giving the views, in many places, of the younger Americans of many different schools, and there is no doubt that even as a work of reference, several of the sections could hardly be bettered. Unfortunately, there is occasional manifestation of a tendency to a wordiness that seems due not so much to inaccurate thought as to inadequate powers of expression. This depreciates the value of the book from the point of view of the busy practitioner, although there is a wealth of information provided for those who are prepared to sift it. The doctor in this country may be somewhat disappointed to find how little space is devoted to the use of drugs, but he will find more than adequate compensation in the description of the rationale and technique of a great variety of other methods of treatment. A curious omission is that of any mention of continuous intravenous therapy in gastro-enteritis, a method which, though of limited application, has surely justified its use in selected cases.

The production of the volume reaches a high level. The illustrations are for the most part happily chosen, although there are too many photographs of brain sections for a work essentially clinical in character. Most of the chapters are profusely documented. The project as a whole is such an ambitious one that it is high praise to say that in the main it has achieved success.

Diseases Peculiar to Civilised Man

Clinical Management and Surgical Treatment. By GEORGE CRILE, M.D. Edited by AMY ROWLAND. New York: The Macmillan Company. 1934. Pp. 427. 21*s*.

THE diseases peculiar to civilised man, according to Dr. Crile, are hyperthyroidism, neuro-circulatory asthenia (the D.A.H. of war-time medicine), peptic ulcer, and diabetes. They are not due to infection, climate, food, or muscular work; therefore their basis must be in man's racial history. In the zoological past certain animals seem to have become extinct because the overdevelopment of one organ handicapped them hopelessly in the struggle for existence; thus the sauropod dinosaurs died of gigantism, and the weight of the antlers of the Irish elk bore him down to extinction. This phenomenon of continuing variation in a fixed direction, even when that direction is racially disadvantageous, may also be seen in the human species. Man's brain and thyroid are developing, while his special senses, teeth, muscles, and digestive organs are regressing from comparative disuse. With the brain and the thyroid are associated the sympathetic nervous system and the adrenals to form a kinetic system, which by initiating and transforming energy drives the rest of the body—and much of the outside world as well. That system has lifted man into his pre-eminence in nature, and now threatens by its restless hyperactivity and unbalanced overdevelopment to drive him to destruction. The signs of his yielding are the four disorders named above, with one or two less common ones like Raynaud's disease.

Such, in brief, is the thesis developed by Dr. Crile in the first part of this book. His thought is exuberant, his style vivid and clear; and he is quite uncritical. The next section argues that treatment of the "hyperkinetic" disorders should aim at diminishing the influence of the brain-thyroid-sympathetic-adrenal system over the rest of the body, and that this can be done by denervating the adrenal glands. The technique of the operation is described. There follows a series of case reports occupying more than half the book, purporting to show that the operation produced improvement or cure in most of the three hundred odd cases in which it was performed at the Crile clinic; but if the cases have been assessed with the same undiscriminating enthusiasm as characterised the opening argument, we should prefer to look to more critical sources for practical confirmation. The book is worth reading for the stimulation which some of the ideas and arguments will certainly provoke, but as a guide to treatment it scarcely inspires confidence.

Ideal Health

Third edition. By ALEXANDER BRYCE, M.D., C.M., D.P.H. Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall Ltd. 1935. Pp. 340. 5*s*.

THIS book deals with food, drink, work, exercise, rest, air, cleanliness, clothing, regularity and moderation, the influence of the mind on the body, and eugenics. Stress is laid upon the physiological basis of the practice of hygiene, whether personal or corporate, and the views put forward are mostly orthodox. In this edition the material has been brought up to date, although the discussion of ventilation is hardly in accord with modern thought. In so far as it is possible for one writer to cover the very wide field of sciences upon which the book touches, the work has been well done. Discussions on such matters as baldness, as to the prevention of which the author has definite views which can hardly be substantiated, and prescriptions of remedies and prophylactics might have been omitted. Many scientific works are mentioned but no accurate references are given; phrases like "recently" or "a few years ago" are not helpful to any student who might wish to consult the writers quoted.

This book is intended for all who are interested in the preservation of health and is therefore written in simple language, but the author hopes that it may be useful to teachers of personal hygiene and students of medicine.

Spectrum Analysis

Clinical and Pathological Applications. By Dr. WALTHER GERLACH and Dr. WERNER GERLACH. London: Adam Hilger Ltd. 1934. Pp. 143. 14*s*. 6*d*.

THE application of spectrographic methods of analysis to biological problems has been delayed because of unsuitable methods of exciting luminosity. Using the so-called high-frequency method, in which high-frequency oscillations in one circuit are transferred by induction to a second oscillatory circuit containing the spark gap used for the analysis, the authors have succeeded in obtaining an insight into the distribution of metals in organic samples. The great advantage of this method is that the most important requirement of spectrum analysis, the avoidance as far as possible of any chemical reagents, is fulfilled. The laborious task of extracting minute amounts of metals by chemical means, with the constant danger of introducing extraneous impurities, is thus avoided. The high sensitivity of spectroscopic analysis renders possible the examination of a piece of tissue, fraction by fraction, so that not only is the presence of the metal proved, but its distribution throughout the organ may be visualised. Using the "method of homologous pairs of lines," in which known quantities of a second metal are added to the tissue for comparative purposes, a quantitative method has been elaborated. The authors are so confident of their technique that the histochemical and spectrographic methods of other workers are discussed and their limitations and fallacies laid bare.

The greater part of the work deals with the application of spectrum analysis. This section is not confined to clinical and pathological applications, as the title of the book suggests, but includes mineralogy and geochemistry. The authors suggest that the study of the distribution in the body of heavy metals administered in therapeutic doses should prove interesting, since in the case of gold they found a certain specificity of the metal for tuberculous tissue.

Tuberculosis in the Child and the Adult

By FRANCIS MARION POTTENGER, A.M., M.D., F.A.C.P., Clinical Professor of Medicine (Department of Chest), University of Southern California, the School of Medicine. London: Henry Kimpton. 1934. Pp. 611. 36*s.*

"Believing that it is the duty of specialists now and then to give back to the general profession an epitome of the knowledge that they have acquired," Dr. Pottenger set himself the task of concentrating the results of many years of study and practice within the limits of a single volume, intended primarily for the use of students and young practitioners. Special attention has been given to what the author describes as major problems in the study of tuberculosis, to childhood infection, to the reactions of the body towards infection, and the part that immunity reactions play in diagnosis; but every aspect of pulmonary tuberculosis has been carefully considered in a work which represents a survey of the whole field. Dr. Pottenger is no apologist for the use of classical methods in clinical examination, but though he rightly condemns those whose zeal for scientific methods of investigation leads them to neglect the more important study of the patient, he attaches a significance to the finer details of physical examination which to the modern student may seem somewhat exaggerated. His claim that the practice of palpation if diligently pursued will result in such an exquisite sensitiveness of finger that even the large bronchi and blood-vessels and the hilar densities can be detected when in their normal conditions might create a feeling of despair in the student who compares the results of his most careful clinical examinations with the shadows of pathological conditions as revealed by radiograms. It is difficult to credit the statement that by light-touch palpation it is possible to feel deep within the thorax; and feel so accurately as to be able to translate the perceived data, not only in terms of greater or lesser density, but also into terms of clinical pathology with remarkable precision. Even if such skill were possible of attainment, the average student could not hope to achieve it in the time at his disposal, or the practitioner to employ it in his daily practice.

The chapters devoted to therapy are excellent, and the student will find here all that he requires for the treatment of the various forms of the disease and of its symptoms and complications. The sections dealing with collapse therapy will form a useful guide to those who are perplexed by the optimistic claims proffered by some and the slighting references made by others to the more active forms of treatment.

The work is well illustrated by figures and skiagrams; clinical interest is maintained by numerous descriptions of illustrative cases, and the bibliography is more than sufficient.

We commend this book to the notice of British readers.

Précis d'histologie

La cellule, les tissus, les organes. By A. BRANCA and J. VERNE, Professeurs à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1934. Pp. 635. Fr.50.

THE labour of producing this sixth edition has been borne by Prof. Verne. The form of the previous edition has been retained and, without adding appreciably to bulk, the various sections have been revised and brought up to date. The work aims at providing what is necessary to the student for his examination in histology and a means of revision for the post-graduate. The result is a competent and sufficiently comprehensive text-book arranged on conventional lines. It is profusely illustrated with drawings in black and white, many of which are far too small, while others are somewhat smudgy and uninspiring. It enjoys the distinction, rare in French books, of being strongly bound in cloth, but this advantage is offset by the inclusion, at the end of the volume, of 48 pages of publishers' advertisements.

JOURNALS

IL BAGLIVI No. 1, January–February, 1935, issued bi-monthly. Annual subscription: 50 *lire* in Italy, 100 *lire* abroad. G. C. Sansoni, Florence.—This is a new Italian journal dealing with all departments of medicine and appears under the direction of Dr. Gaetano Gentile. It is admirably printed. Four sound clinical essays are followed by a group of brief reviews, while the last third of the journal is taken up with abstracts from contemporary literature. These are interesting, and where they can be tested appear to be carefully done, but one may be permitted to guess that the staff employed on the work are not familiar with the English language. A foreword brings to modern notice an Italian savant whose name does not occur in medical literature with as much frequency as might be expected, either from his ancient fame or his accomplishments. The journal is named after him.

Giorgio Baglivi was born in 1668 and received his medical education at Rome, where he came into close contact with Malpighi, whose teachings he profited by and whose autopsy he performed. He succeeded Lancisi in the chair of anatomy in 1696 or 1697, and shortly afterwards published *De Praxi Medicá*, described in the first English translation as "the practice of physick reduced to the ancient way of observations; containing a just parallel between the wisdom and experience of the ancients and the hypotheses of modern physicians." The work was translated also into German and French at different dates, and procured for Baglivi a wide reputation and election to the Royal Society. He died in 1707, being only in his 39th year.

THE centenary volume of St. Mark's Hospital, which was reviewed last week (THE LANCET, March 30th, p. 756), is published by Messrs. H. K. Lewis and Co., Ltd., London, price 30s.

THE LANCET

LONDON: SATURDAY, APRIL 6, 1935

REHABILITATION AFTER INJURY

Dr. H. H. KESSLER, who is head of the Rehabilitation Commission at Newark, New Jersey, told the Royal Society of Medicine on Jan. 15th, that after attending a rehabilitation centre most disabled workers were able to go back to the work they had done before. He made an exception, of course, for major amputations. A rehabilitation service was, he said, available in 44 of the American States; all of them provided vocational training for the civilian disabled. The State of New Jersey was unique in offering surgical and medical rehabilitation as part and parcel of the workmen's compensation unit; it was supported out of the rates and taxes at a cost of about 50,000 dollars a year. In this unit an assessment of disability was made by the State physician and the referee put the stamp of legal approval upon it. The county court method of adjudicating claims had been tried in the State; it had proved inadequate and was given up. Dr. KESSLER's visit to this country was of necessity a brief one, but he brought with him a film giving a vivid picture of the rehabilitation work done in New Jersey, and this film has been shown several times since he left, including a demonstration last week at Bush House to a select audience of people especially interested in physical disablement, including orthopædic surgeons, representatives of insurance companies and trade-unions, and Mr. GEOFFREY PETO who has special parliamentary experience.

It is a curious thing that there should be in the home counties no training centre for adult cripples, and this is the more remarkable as it was the work of the Lord Roberts memorial workshops which suggested the idea to Dr. KESSLER. There is actually no place where crippled persons whose disability precludes them from being absorbed into industry in the normal way can become fitted to do so by suitable training. There are of course places such as Enham Colony at the service of the war cripple, and it was, we believe, the design of the promoters of Enham to put its facilities at the disposal of civilian industrial cripples when its primary object was achieved. The omission is however now being made good to some extent at the Cripples' Training College at Leatherhead Court, the scheme for which was launched at a Mansion House meeting in March, 1934, and which is to be formally opened in June next. Here the primary object is not vocational training. What the trainees are offered is fundamental practice in electro-mechanical technique as carried out under industrial conditions, concurrently with the assembly and manufacture of articles related thereto on a commercial basis; thus they can learn to adapt themselves to the physical limitations imposed on them by their disablements. At present a charge of 35 shillings per week is being made, but it is hoped to reduce this figure after the first year's running.

The object of Leatherhead Court, as of the rehabilitation centres in the States, is to get the insured man back to his work as soon as possible. How little this is now the case was brought out two years ago at the Liverpool Medical Institution,[2] when Dr. H. E. MOORE, surgeon to the L.M.S. Railway, produced evidence showing that many railway men who had met with accidents might have returned to their former occupations after brief periods of time if their treatment had been adequate. His figures showed long periods of incapacity amongst men whose active treatment had ceased before they were fully restored, and it was pointed out in the discussion that attempts to curtail the unemployable period, or to reduce ultimate disability by coöperation, were met with the reply from the employer "We are insured" and with the reply from the insurance company "We are covered." That is unfortunately one effect of the Workmen's Compensation Acts as at present administered in this country, and everyone present at the Bush House meeting agreed that this was the case. As the B.M.A. Committee on Fractures stated, our compensation Acts, although humane and beneficial in many respects, contain no provision for rehabilitation after injury, and have in many cases played a powerful part in prolonging the injured man's disability. The provision of light work for the disabled or convalescent man presents almost insuperable obstacles. The man himself is often afraid to take up work that might prove too much for him, and it is no wonder that to-day, with so much unemployment, there is a tendency to nurse invalidity as an alternative means of subsistence. An actual incitement to the prolongation of disability is provided in the lump sum form of compensation. The B.M.A. Committee had before them evidence that solicitors' touts wait on accident cases to promote profitable litigation, and the improvement is often amazing in the condition of a man, who has been long kept wondering what amount of compensation he would get, when the lump sum is paid. These crippled men are apt to drag on in misery partly because of the variety of agencies from which they can obtain certificates of disability, and partly because, as things are, our insurance companies are interested primarily in compensation and not in rehabilitation. There are some five Government departments concerned and since everybody's business is nobody's business, there is no initiative towards the great national scheme required to re-administer the workmen's compensation laws in the interest of speedy recovery. Employers fear that the man who has had one accident is more likely to have another, and they have been recently intimidated by a decision that an employee who comes to them with the results of a previous accident and has another will make them liable for both. It is in the interests of all parties to reconsider the present state of affairs

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[1] See THE LANCET, Jan. 19th, p. 151.

[2] THE LANCET, 1933, i., 86.

if only on the ground of economy, for it is admitted that in this country 37 per cent. of the premiums disappear in administration, whereas in New Jersey 5 per cent. is sufficient to run the scheme. We wish well to the Leatherhead scheme and trust that it will serve not only as an object-lesson but as a stimulus to general inquiry.

THE METABOLISM OF VIRUSES

By the application of new techniques and the refinement of old ones the viruses are in many respects being brought into line with other forms of organised life. The larger viruses such as vaccinia, ectromelia, or psittacosis, which are big enough to contain between five and ten thousand protein molecules, appear to be more nearly related to living than to non-living systems. It is still difficult to conceive of the mode of life and pathogenic action of the really small viruses such as foot-and-mouth disease, which has a diameter only about four times that of serum albumin. In this search for more precise knowledge about the viruses, M. Schlesinger[1] and H. Schüler[2] studying the chemical composition and metabolism of one of the larger bacteriophages, have obtained results of great interest. They have grown the phage WLL on a strain of *B. coli* No. 14 which itself was growing on a synthetic lactate phosphate medium. The phage was grown for 48 hours, during which time no visible lysis appeared. The bacteria were then filtered off through paper and the filtrate was concentrated by passage through a collodion membrane. The phage remained on the membrane and could be recovered quantitatively. The concentrated suspension was then centrifuged for three minutes at 15,000 revolutions per minute and the supernatant fluid taken and centrifuged again for half an hour at the same pace with 1½ c.cm. per tube. The second sediment was drained, washed with distilled water, and used as the phage preparation. Rabbits injected with such preparations gave no serum agglutinins for the organism on which the phage had been grown, but they did produce antilytic antibodies. The activity of such preparations was tested on *B. coli* No. 88. Schlesinger has investigated the chemical composition of the phage. The elementary analysis gave C 42 per cent., H 6·4 per cent., N 13·2 per cent., P 3·7 per cent.; this roughly corresponds to the composition of a nucleo-protein. Washed centrifuged phage preparations gave positive Millons and biuret reactions, but a negative Molisch test, indicating the absence of carbohydrate. The activity of the preparations may be judged by the fact that 1·0 mg. dry weight of washed centrifuged phage corresponded to $2{\cdot}3 \times 10^{12}$ active phage particles.

Schüler has used the methods elaborated by Schlesinger to investigate the metabolism and enzymes of this coli phage. In most of the experiments 1·0 mg. dry weight of phage was used, but for the experiments on respiration and fermentation up to 17·5 mg. were obtained. Schüler found, using the delicate manometric method of Warburg, that the oxygen uptake and the carbon dioxide productions of even such large amounts of phage were well below the experimental error. If dead bacteria were added to the medium the result was not affected. Nor did phage in amounts not causing visible lysis produce any change in the oxygen consumption of living susceptible coli. Schüler then investigated the hydrolytic enzymes, trypsin, papain, lipase, amylase, maltase, nucleosidase, urease, arginase, and phosphatase. Of all these, phosphatase was the only one found to be present in the phage suspension. This phosphatase hydrolyses hexose diphosphate, nucleic acid, hexose monophosphate, and glycerophosphate. The enzyme seems to have the same general characteristics as phosphatases from tissues and bacteria. The pH optimum is pH 8·5 and the action is inhibited by inorganic phosphate, the inhibition being greater at low substrate concentrations than at higher. Unlike tissue phosphatases the enzyme is not inhibited by fluoride, which does inhibit lysis of bacteria by phage. Schüler found that well-washed phage deposit did not hydrolyse organic phosphates, but that the addition of the supernatant washings restored the hydrolytic power. He therefore postulates a co-enzyme. The reasons for considering that the enzyme is a constituent of phage itself rather than a fragment of the bacteria of the same size as, or adsorbed on to, phage are (1) that a culture of the *B. coli* contains only a very weak phosphatase, and (2) that the amount of enzyme runs roughly parallel to the number of phage particles present. One mg. wet weight of phage hydrolyses 500–1000 γ P_2O_5 per hour at 37° C. and pH 8·5 with 1·0 per cent. hexose diphosphate as substrate. Concentrated bacterial filtrates show only very slight phosphatase action. Since no visible lysis took place during the growth of the ofphage the author concludes that it is unlikely that the phosphatase in the sediment is an internal enzyme of the bacterium which manifests activity only after the disruption of the organism. It is unfortunate that he has not included in his controls the phosphatase activity of the sediment obtained from *B. coli* No. 14 after lysis by something other than phage. The quantitative relationship between the enzyme activity and the number of active phage particles present make it more probable that the enzyme is in fact a constituent of the phage itself; but this does not exclude the possibility that the parallelism between phosphatase activity and the amount of phage present is due to a quantitative adsorption of an intracellular bacterial phosphatase on to the phage particles.

This work is one of the first published accounts of a study of the metabolism of an organism in the submicroscopic class similar to the viruses. A less limited though still small range of enzyme activity was found by B. E. Holmes and A. Pirie[3][4] using the organisms of bovine pleuro-pneumonia and agalactia. In both these organisms only one strong dehydrogenase, that for lactate, could be demonstrated. Centrifuged organisms differed from phage in that they had a measurable respiration in the presence of lactate, and in the case of pleuro-pneumonia a fermentation of glucose and other sugars was well known to take place. The viability of the organisms ran parallel with the enzyme activity, and such treatments as exposure to methylene-blue and light which destroyed the one invariably destroyed the other. It is interesting to speculate on the part played by the phosphatase in the lysis of the bacterium and the growth of the phage. F. M. BURNET[5] has shown that one phage is adsorbed by the specific flocculable substance of the susceptible organism and that after adsorption it can no longer lyse fresh susceptible bacteria. In addition, susceptibility to phage among coliform organisms is related to antigenic structure. It may be that the breakdown of the specific flocculable substances is an essential part of the lysis of a bacterium, and that the phage phosphatase helps to bring this about. It would be interesting to know if the phage used by BURNET contains phosphatase and, if so, what effect the addition of specific flocculable substance had on its activity.

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[1] Biochem. Zeits., 1933, cclxiv., 6; Ibid., 1934, cclxxiii., 306.

[2] Ibid., 1934, cclxxvi., 254.

[3] Brit. Jour. Exp. Path., 1932, xiii., 364; ibid., 1933, xiv., 290.

[4] Biochem. Jour., 1934, xxviii., 411.

The continuation of SCHÜLER's work should bring interesting results. BURNET and W. J. ELFORD have shown that bacteriophages are of many different sizes, and the next step will be to discover how widespread among them is the phosphatase and how far the enzyme activity is correlated with the power to effect lysis. The new methods of attack given by the high speed centrifuge and carefully graded membranes hold out hopes that the way is now open for a vigorous attack on the problem of the way in which viruses obtain the energy necessary for growth.

ST. DUNSTAN'S

IT is exactly 20 years since the late Sir ARTHUR PEARSON began his work for war-blinded soldiers, sailors, and airmen at a house in the Outer Circle of Regent's Park, whose name is now almost a synonym for the care of the blind. Nearly 2000 blinded men and their families are still under the care of St. Dunstan's, and it is distressing to learn that even at this late date there are new admissions. The nineteenth annual report informs us that 19 new cases were admitted during the year, 5 of whom were blinded by the delayed effects of gas poisoning. The house in Regent's Park is no longer the heart of the organisation, and for that reason, perhaps, there is a chance of St. Dunstan's dropping a little out of the public eye. Any falling-off in support would be a disaster, for the average age of the men is 45 and the youngest is only 33. The administrative headquarters are housed in a building, originally a group of workshops, in the Inner Circle of Regent's Park, and the sales department for articles made by St. Dunstan's men is in Kentish Town. But the training centre is now to be found in the large convalescent and holiday home at Brighton, the gift of the Federation of Grocers' Associations of Great Britain. Here the beginners learn their new occupations and the old patients return for refresher courses or for holidays. The matron, who knows every one of the 2000 personally, is hostess to this large floating population. In one part of the building are wards for totally disabled blinded men who will require institutional care for the rest of their lives.

Most of the old patients of St. Dunstan's are now out in the world earning their living. Their occupations range from shopkeeping and basket-making to poultry farming, boot-making, and carpentry. The St. Dunstan's roll also includes a chartered accountant, a professor of languages, three clergymen, a barrister, a solicitor, and the director of an engineering firm. One keeps a road house. In moments of difficulty old patients find in St. Dunstan's an adviser, encyclopædia, and repair works rolled into one. Medical advice is available for those who are ill; legal advice for those who are in difficulties about National Health Insurance or a disputed right-of-way; financial troubles may be overcome by a judicious grant. Each man has a Braille watch, a wireless set, and a typewriter, all kept in repair by St. Dunstan's. The recreations of blinded men are not as limited as outsiders are apt to think. Many are fond of swimming, and others find the proper competitive flavour in walking matches. Rowing and physical jerks are available for Londoners, and at Brighton some enjoy practice in kicking at goal, which seems to show how deep the passion for Association football goes among British people. Some are keen gardeners. Cards and dominoes are usual pastimes, and the St. Dunstan's Band has even been broadcast in the National programme. Probably the most remarkable achievement of a remarkable organisation is that of maintaining the spirit of good fellowship which prevailed during the war into the carping times of peace.

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THE PRE-SCHOOL CHILD

IN opening, from the chair, a discussion at the annual meeting of the National Baby Week Council on March 27th, Dr. G. F. Still said there was need for some better term than "pre-school" child to define the child between the ages of 2 and 5 years. An infant of 6 months old was in some sense a pre-school child, and at 5 years some children had already been attending school for two years. Local authorities did not lack powers to care for pre-school children; the point at issue was how far those powers were being exercised. It was, no doubt, more difficult to provide for their welfare than for that of the school-children, and yet the years from 2 to 5 were fraught with the gravest influences on the child's well-being, influences related not only to physical but even more closely to mental and moral health. He had a profound belief in the value of day nurseries and nursery schools as places where children at a plastic age unconsciously learned order and discipline. Certainly the pre-school age was an age of frailty; the actual risk to life was greater in the three years of pre-school life than in the subsequent school years. In some districts the number of deaths occurring in children between 2 and 5 years of age had been actually greater than in the whole ten years from 5 to 15. He noted the high prevalence of tuberculosis, of respiratory diseases, and specific fevers during the first five years of life. Some of these factors were being combated, and against one of the worst the use of dried and pasteurised milk was a powerful preventive. If a larger supply of milk was to be made available for these children, it should be in the form of pasteurised milk.

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[5] Jour. Path and Bact., 1934, xxxviii., 285; Ibid., 1934, xxxviii., 301.

ANNOTATIONS

THE INCIDENCE OF TUBERCULOSIS AMONG STUDENTS

THE example set by America and Germany in the matter of large-scale systematic medical examinations of students is being followed by several other countries. Spain and Denmark are among the latest converts to this system. Prof. L. Sayé[1] of Barcelona has recently given an account of such examinations, which were introduced as a compulsory measure at the end of 1933 with the object of discovering tuberculosis in an early stage. Since then 584 male and 53 female students have been examined, and of the 33 found to be tuberculous, as many as 26 had been ignorant of their disease. The comparison made in the course of these examinations between radioscopy and radiography was definitely unfavourable to the former, which in several cases had failed to indicate lesions demonstrable by radiography. When Prof. Sayé's observations were discussed by the French Academy of Medicine, the consensus of opinion was emphatically on the side of radiography. Prof. Bezançon and Prof. Sergent refused to be impressed by unsupported radiological findings and insisted on the balanced judgment which depends on a careful marshalling of all the evidence, including the results of clinical examination. In Denmark, Dr. J. Holm[2] has conducted tuberculin surveys of students with Mantoux's test pushed to 1 mg. of tuberculin. His examination of several hundred medical students showed that the percentage of positive reactions among them rose from 70 per cent. at the commencement of their studies to 98 per cent. towards their close. This rise in the proportion of reactors was not so great in the other faculties, and the deduction that the work of the medical student is more favourable to the development of tuberculosis than that of the other students seems to be justified. Dr. Holm concludes from his investigations that, while only 2 per cent. of all the students in Copenhagen suffer at the present time from active tuberculosis, 10 per cent. of the senior medical students have an active infection.

DIPHTHERITIC PARALYSIS

PARALYSIS of the eighth cranial nerve in diphtheria is rare. Kourilsky, Baruk, and Aubry[3] recently reported to the Paris hospitals medical society a case with bilateral vestibular signs. The mild primary angina had not been treated. They attributed the successful outcome to serotherapy instituted after the paralysis was established. This report stimulated other observers to record another such case; it also provoked renewed discussion on the value of antitoxin in the treatment of diphtheritic paralyses in general. A month later Marchal, Soulié, and Grupper[4] described a case of diphtheritic polyneuritis with involvement of the right auditory nerve. Antitoxin alone failed to affect the condition. Inspired by the technique employed in tetanus, they combined serum treatment with general anæsthesia, and noticed rapid improvement. And at the same meeting of the society Duvoir, Pollet, Kreis, and Greene[5] reported a similar case which had, for a time, been under their care and with which they had lost touch. It transpired that both sets of observers had been reporting the same case. From the two accounts a complete record is available. Fortified by Kourilsky's success, M. J. Comby,[6] an old advocate of serotherapy for paralysis, reiterated his belief in its value and included in his communication the recorded successes. G. Ruelle,[7] on the other hand, is convinced of the futility of the method, and finds support for his scepticism (1) in the impossibility of evaluating treatment on clinical evidence alone, because of the tendency to spontaneous recovery; (2) in Roux's dictum that the action of antitoxin is like that of water in a fire—it prevents spread but does not repair damage; (3) in experimental work rendered possible by the new method devised at the Pasteur Institute by Ramon, Debré, and Uhry[8] of producing diphtheritic paralysis in animals with modified toxin. Using their technique Ruelle[5] investigated various methods of treatment employed in the human subject. He concludes, as did the Pasteur Institute workers, that antitoxin has no curative action on paralyses; nor has toxoid, anæsthesia, urotropine, sodium salicylate, potassium iodide or the oleate, oleo-ricinate or taurocholate of sodium. In a further study[9] Ruelle satisfied himself that paralyses may appear when the blood contains a high content of antitoxin and when the amount is actually increasing. He shows that the fixation of toxin to the nervous tissues occurs early, and that the production of antitoxin after this in no way influences the subsequent appearance or duration of paralyses. Experimental support is thus provided for the general opinion of clinicians in this country, who believe that no known therapeutic measure—physical, chemical, bacteriological, or serological—can directly influence the nervous lesions.

SPECIALIST OBSTETRIC SERVICE

INVESTIGATIONS carried out in recent years in this country by the Departmental Committee on Maternal Mortality, and in America by the New York Academy of Medicine, furnish evidence that about half the maternal deaths might be avoided if, as Dame Janet Campbell puts it in a newly published pamphlet,[10] "the necessary professional competence, the clinical facilities, the material aid, and the intelligent coöperation of the patient were available always." During the discussion on maternal mortality in the House of Commons on March 25th, Dr. O'Donovan pleaded that, before the country embarks on a widespread scheme of gynæcological clinics, the medical profession shall produce competent gynæcologists—"men with trained first-class brains"—to man them. The word clinic, he said, may cover a multitude of incompetencies, and Dame Janet follows the same line of thought when she states that a national maternity service is only likely to raise the standard of midwifery, and to reduce the toll of avoidable accidents if a selected corps of workers can be induced to participate in the scheme. While there has been steady growth both in the number of antenatal clinics throughout the country, and in the attendances made, it does not appear that there has been any appreciable effect on the maternal death-rate as a whole, though in certain selected medical and hospital practices, where the supervision is carefully organised and thoroughly carried out, excellent results have been obtained. But these practices, Dame Janet says, are exceptional, and in many places the quality of work has not kept pace with its extended scope, and a good deal of it has been "partial, insufficiently skilled or inefficient." Antenatal care has, admittedly, been less successful than its advocates hoped, and in consequence there has been a certain reaction against it; but it is not the principle which is at fault, but its application. The first great service rendered by antenatal clinics was to demonstrate the need for supervision of pregnancy alike to doctors, nurses, midwives, and the general public. They still form a valuable type of institution and one capable of expansion, but the medical officer in charge of every such clinic should be a skilled obstetrician closely in touch with practical midwifery, and some arrangement should be devised to prevent such overcrowding that a doctor is asked to deal with more patients at a session than he can attend to adequately. Dame Janet calls attention to the fact that, although all registered medical practitioners are entitled to practise in every branch of the healing art, it is generally recognised that those practising in certain special departments are expected to furnish definite criteria of skill and competence. She suggests that one of the greatest contributions which the profession could bring to the solution of the maternal mortality problem might be to insist on post-graduate training, and evidence of special study and experience on the part of doctors intending to make midwifery an integral part of their practice.

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[1] Bulletin de l'Académie de Médecine, 1935, No. 6, p. 232.

[2] Ugeskrift for Laeger, Feb. 14th, 1935, p. 202.

[3] Bull. et mém. de la soc. méd. des hôp., 1934, lviii., 1706.

[4] Ibid., 1935, lix., 52.

[5] Ibid., 1935, lix., 55.

[6] Ibid., 1934, lviii., 1756.

[7] Bruxelles-méd., 1934–35, xv., 213.

[8] Ann. de l'Inst. Pasteur, 1934, lii., 5.

[9] Ibid., 1935, liv., 185.

[10] Maternity Services. By Dame Janet Campbell, M.D. Faber and Faber Ltd. March, 1935. Pp. 56. 1*s*.

TYPHOID DUE TO SHELL-FISH

An attack on the hygienic shortcomings of the French shell-fish industry, made by an expert bacteriologist, contains information on the hygienic problems of shell-fish not to be found elsewhere. Dr. Belin's[1] interest in the subject was aroused by a tragedy in his own family following the eating of oysters. In attempting to assess the justice of the charges allowance must be made for the bitter sense of grievance, but the picture he paints carries a certain degree of conviction, enough to cause any reader who is not very courageous or very gluttonous to forswear oysters when on his next visit to France. According to Dr. Belin, no serious attempts are made in France to render safe the consumption of shell-fish. In the Mediterranean region in particular, the conditions of culture and sale are said to be unsatisfactory in the extreme. In the commune of Marseilles (654,000 inhabitants) alone, Dr. Belin estimates the number of cases of typhoid ascribed to the consumption of shell-fish is upwards of 2000 a year, and he says that the incidence falls particularly heavily upon visitors who have had no opportunity of acquiring environmental immunity. Dr. Belin's bibliography is full but by no means complete; there is no reference, for instance, to Timbrell Bulstrode's classical report of 1911 (vide THE LANCET, April 22nd, 1911, p. 1089).

It is interesting to reflect that we import a considerable number of French oysters into this country. These oysters, so far as London is concerned, are subject to the very thorough bacteriological and general control of the Fishmongers' Company, and on the whole prove a satisfactory product. It is obvious, therefore, that French cultivators catering for the English market cannot fairly be held to deserve the strictures which Dr. Belin levels against French cultivators in general. Beyond the special supervision of the London markets by the Fishmongers' Company, the regulations for the control of the sale of shell-fish are by no means comprehensive. They consist of a brief set of regulations set up by the Public Health Acts, and they make no provision for preventing the importation of contaminated shell-fish throughout the country as a whole. The vigilance of the Fishmongers' Company, combined with these regulations, however, appears to have ensured an almost complete immunity from outbreaks of enteric due to shell-fish in this country. One of the few remarks of Sam Weller which has failed to stand the test of time is his observation of the "wery remarkable circumstance that poverty and oysters always seem to go together"; this, alas, appears to be no longer true in Great Britain. It is consolation, nevertheless, to know that if we pay dearly for our oysters we can eat them in safety.

AN EIGHTEENTH CENTURY STUDY OF THE BRAIN

In 1882 a work on the brain by Emanuel Swedenborg was published, having been translated, edited, and annotated by Dr. R. L. Tafel from the original Latin MS. written between 1741 and 1744. It has now been reprinted under the auspices of the Swedenborg Society[1] and is well worth attention. The picturesque nomenclature of the eighteenth century is not the least of its attractions. The editorial annotations are of help in the interpretation of the work, and must obviously have involved a great deal of patient and learned research into the anatomical and physiological literature available at the date of publication. The peculiar genius of Swedenborg was, at the period of his life when this book was written, directed primarily into philosophical and physiological, rather than into anatomical channels. This is shown throughout the work by the constant endeavour to discover the functions of the brain and its appendages. The method used by the author was not that of original experiment, but rather of analysis of and deductions from the anatomical facts which were known in his day, combined with a study of pathological cases. He deliberately abandoned experimental research because, to use his own words: "I find when intently occupied in exploring the secrets of the human body, that as soon as I discover anything that had not been observed before I begin (probably seduced by self-love) to grow blind to the most acute researches of others, and to originate the whole series of inductive argument from my particular discovery alone"—a quotation that might not inaptly be displayed in research laboratories to-day. His method was one of induction, and shows remarkable originality of thought and outlook. Swedenborg's knowledge of contemporary anatomical knowledge was profound; but he never regarded it as an end in itself, only as a means to arrive at an explanation of the functions and mode of working of the brain. He based his physiological theories on the most minute examination of the form and relations of the parts of the brain, and some of the results he obtained are certainly striking. For example, he ascribes the motor areas of the brain to the positions now known to be the correct ones, even to the relative positions of the areas controlling the head, arms, trunk, and lower limbs. He also locates the intellectual faculties to the frontal region of the brain. In common with many philosophers of his time, he was much troubled about what part of the brain was occupied by the "soul"; he discarded entirely the theory of Descartes, largely held at that time, that the "soul" resided in the pineal body, but ascribes it rather to the cortex of the brain. From an analysis of the minute structure, as then known, of the pituitary gland, he was led to ascribe to it functions of the utmost importance in the composition of the blood, and, in fact, calls it the "arch-gland" of the body. He devotes many pages to the study of the motion of the brain, and draws the conclusion that respiratory motion is that proper to the brain itself; the pulsatile motion he regards as being primarily derived from the vessels of the dura.

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[1] Coquillages et Fièvres Typhoïdes, un Point d'Histoire Contemporaine. By Dr. Ve M. Belin, Director de l'Institut Bactériologique, Tours. Paris: Les Presses Universitaires de France. 1934. Pp. 230. Fr. 15.

[1] The Brain. Considered Anatomically, Physiologically, and Philosophically. By Emanuel Swedenborg. Second Impression published by the Swedenborg Society. London. 1935. In Two Volumes. Vol. I.: The Cerebrum. Pp. 794. Vol. II.: The Pituitary Gland, Cerebellum and Medulla Oblongata. Pp. 645. 15s. per volume.

INFANT MORTALITY-RATES IN VARIOUS COUNTRIES

A SOMEWHAT surprising characteristic of the decline which has been recorded in the infant mortality-rate in all European countries is an accentuation of the differences between one country and another. This feature is clearly shown in a study of infant mortality by K. Stouman, former chief statistician of the Health Section of the League of Nations Secretariat.[1] The explanation of this increased variability lies no doubt in the fact that the fall began at different periods in the various countries, and is progressing with different rapidity. Stouman sees no reason why stabilisation, when it finally approaches, should maintain the extreme national individualism now shown. At present, however, there are no signs of stabilisation, and the fall continues even in countries where the rates are lowest. Also the statistics of several countries in recent years show some improvement in the neonatal mortality, in which so far very little has been achieved. International comparisons of the neonatal mortality-rate are peculiarly difficult to make owing to the differences in definitions and registration systems. Stouman takes stillbirths and infant deaths under 1 month to represent together "birth mortality" and finds a much smaller range of variability in Europe than with the rate at 1–11 months. The former rate, he suggests, is related chiefly to vitality, the latter to surroundings, and surroundings are more subject to change than is vitality. One effect of the greater decline in the rate in the second six months of life is an increase in the excess of the male over the female mortality-rate—for the male excess is greater in the first six months of life and must grow larger as the proportion of early deaths increases. Thus a rise in the male excess may be taken, Stouman suggests, as a sign that the "selective" forces in a country (those determining mortality in the first month) are gaining on the "destructive" forces (those determining mortality at 1–11 months). In England and Wales the infant mortality-rate is appreciably higher in the towns than in the rural areas. This is not, however, a general feature of infant mortality. The rate is now lower in towns in most of Central Europe—in the Netherlands, Belgium, Bavaria, and Switzerland particularly. Statistics from Holland, Denmark, and the United States show that the rural excess is at its maximum in the second and third months of life. It seems to be at this point of infant life, Stouman remarks, that the greatest achievements have been realised by the more active health services of the large towns. It follows that the health services of rural districts, as well as of large towns which are still somewhat behind in this respect, would do well in directing their attention toward the problems connected with infant life during these critical months.

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[1] Quart. Bull. of the Health Organisation, December, 1934.

NITROGEN RETENTION AT THE ONSET OF SCARLET FEVER

THE renal complications of scarlatina fall into several categories. At the height of the fever albuminuria is encountered in a considerable proportion of patients, it is usually benign, and it is even doubtful whether it can properly be considered an index of true involvement of the kidney. Focal nephritis, characterised by intense hæmaturia and a benign course, occurs rarely, also during the period of fever. The classical acute nephritis of scarlatinal origin is usually encountered towards the beginning of the third week of the disease; Barasch in an analysis of 121 examples, showed that 90 of them had their onset in the third or fourth week of the disease. Suppression of urine sometimes occurs at the very outset of scarlet fever, especially in the more malignant types of the disease; usually fatal in the severer cases, it may subside completely after a few days, it is doubtful whether this complication is a true nephritis or whether it represents an arrest of the renal circulation from purely nervous causes.

Recent work suggests that nitrogen retention, without gross alteration of the volume of urine secreted, and often without albumin in the urine, occurs in a proportion of all cases of scarlet fever. This interesting fact has been closely studied by A. Lemierre.[1] At the Hôpital Claude-Bernard in Paris they have observed in 49 cases of scarlet fever of varying degrees of severity a normal blood nitrogen or a mild degree of elevation of the blood nitrogen falling to normal after several days. In 8 cases the blood-urea was raised to about 60 mg. per 100 c.cm. at the onset of the disease and fell below 50 in from two to four days, but in 4 other cases the blood-urea was found considerably elevated, in the region of 100 mg. at the outset, and rose in several of them to a figure of nearly 300, falling slowly from this figure to return to normal after some weeks. During the period of observation these cases were passing an approximately normal amount of urine from which albumin was completely absent or demonstrable merely as an occasional minimal trace; the blood pressure was not raised and the only other outstanding facts were dryness of the tongue, a tendency to vomiting and diarrhœa, and a condition of prostration with occasional mental excitement out of proportion to the general condition of the patient. All these cases cleared up spontaneously, although recovery was delayed in two of them, and careful tests of renal function during convalescence showed that the kidney emerged without permanent impairment. On the question whether these cases should be considered as examples of nephritis or whether they merely represent some form of extrarenal nitrogen retention Prof. Lemierre is very guarded. He recalls that oliguria is almost universal at the onset of scarlatina, and that this by itself may be an index of renal insufficiency; the virus of scarlatina, like other toxins, provokes to some extent a breakdown of the proteins of the body tissues, and this circumstance will also tend to increase the blood nitrogen. There are therefore several factors tending to produce the phenomenon he has studied. But even though it is very possible that this nitrogen retention is evidence of a purely functional disturbance it remains a strong indication for a low protein diet at the onset of the disease, combined with an abundance of water. Prof. Lemierre holds also that the salt-intake should be strictly regulated, since his observations indicate that the elimination of sodium chloride by the kidney is definitely interfered with during the febrile period.

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[1] Maladies Infectieuses : Leçons cliniques professées à l'Hôpital Claude-Bernard. Par A. Lemierre, Professeur à la Faculté de Médecine de Paris ; Membre de l'Academie de Médecine. Paris : Masson et Cie. 1935. Pp. 408. Fr. 60.

ROYAL MEDICAL BENEVOLENT FUND

THE annual general meeting of the Royal Medical Benevolent Fund was held on Wednesday, March 27th, at the rooms of the Medical Society of London, Sir Thomas Barlow presiding. The report for the year ending Dec. 31st, 1934, was read and adopted, and its contents showed real progress. There was during 1934 an increase of income of £1676, while 869 new subscribers were enrolled—both figures constitute a record. The number of persons directly connected with the medical profession who were individually helped during the year was 670, and there was paid out by the Fund in quarterly, monthly, or single payments during the period £18,415. The particulars concerning many of the beneficiaries are stated from time to time in our columns, proving the existence of the Fund to be vital. "At present," says the report, "their needs can be met only by an annual grant of £40 to a medical practitioner and £26 to a dependent. Not until the Fund has the full support and sympathy of every member can the profession feel confident that misfortune in its own ranks can be adequately dealt with by this medical charity." All who read the details of individual cases helped, as they are recorded in our columns, will see how often the help granted is insufficient to the needs. So we would endorse with emphasis the words quoted from the report. The Fund does admirable work directly, and by means of its Ladies' Guild, through which organisation personal service is given in the shape of the allocation of medical comforts, gifts of clothing and coal, pecuniary grants and arrangements for holidays; the Guild indeed brings to the beneficiaries of the Fund most valuable succour.

The centenary of the Fund will occur in 1936, and we learn from the report that careful consideration is being given by the committee of the Fund as to the manner in which the occasion should be celebrated. The committee believe that it would be the unanimous wish of the profession that no application should be made in any form to the public for assistance but that, as in the case of the benevolent funds of other professions, the appeal should be made only to members of the profession. This is an attitude which should commend itself to all of us, and affords a most forcible argument for further subscriptions to the charity, for until the Fund has a full backing by the medical profession recourse to public benevolence can with difficulty be justified. We therefore bring to the notice of our readers the following facts: the Royal Medical Benevolent Fund meets urgent needs; its money is distributed upon careful scrutiny and with every practical expression of sympathy; it is not duly supported; records exist only to be broken; the secretary of the Fund, Mr. E. C. Pennefather, M.B.E., can be addressed at the office of the Fund, 11, Chandos-street, London, W.1, and his acknowledgments are made by return of post. If this were being written in America it might well end "Attaboy"; one may translate the picturesque expression into the phrase, "Please subscribe and subscribe quickly."

HYDATIDIFORM MOLE

A FORTNIGHT ago we reported a meeting of the obstetric section of the Royal Society of Medicine at which Mr. Alan Brews described a study of 72 cases of hydatidiform mole admitted to the London Hospital since 1912. Almost coincidently comes a study of 78 cases by J. T. Sherman,[1] and the two series may profitably be compared. The writers agree that the cause lies in the ovum rather than its environment; and Brews describes a twin pregnancy consisting of a normal placenta and fœtus and also a hydatidiform mole. In some respects, however, there is a profound difference in the findings. Thus Brews notes that 37 per cent. of his cases were in women over forty, whereas of Sherman's series only 10 per cent. were above that age. Again, Sherman states that chorion-carcinoma very rarely follows hydatidiform mole, but as only 12 of his patients were followed up and one of these developed it, his evidence cannot be held adequate. Brews, who was able to trace all but 17 of his series, found that no less than 6 cases, or 8 per cent., developed chorion-carcinoma. The mortality was low, about 2 per cent., in both series, and treatment was uniformly conservative in that whenever possible the uterus was allowed to empty itself. In a substantial proportion of cases (Sherman 7 per cent. and Brews 20 per cent.) the uterus was observed to be smaller than would have been expected from the probable duration of the pregnancy—a finding contrary to the usual text-book description. Both investigators report a high incidence of toxæmia (about 1 in 3) and both emphasise the value of the Aschheim-Zondek test as an aid to diagnosing the condition itself and as a means of excluding the subsequent growth of a chorion-carcinoma. Other observers (see p. 812) have found the test capricious.

On Wednesday afternoons, from April 24th to June 26th, at the Institute of Medical Psychology, Dr. H. Crichton-Miller and Dr. Cedric Shaw are lecturing on problems relating to psycho-physical adaptation. The address of the institute is Malet-place, London, W.C., and further information may be had from the secretary. These lectures constitute an introductory course for practitioners.

THE firm of Hodder and Stoughton, the proprietors of THE LANCET, has never taken in a new partner or a new director other than direct descendants of the founders of the firm, Matthew Henry Hodder and Thomas Wilberforce Stoughton. Mr. R. Percy Hodder-Williams (the present chairman of the firm) and his brother, Mr. Ralph Hodder-Williams, announce that they are now appointing to the directorate two of their nephews, Paul Hodder-Williams and John Attenborough, great-grandsons of M. H. Hodder, the original senior partner of sixty-seven years ago.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—Owing to the demand on the accommodation of this hospital in its present building in Marylebone-road, it has been decided to press on with the work of building the first wing of the new hospital at Ravenscourt-park. The cost of the first stage will be £60,000.

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[1] Amer. Jour. Surg., 1935, xxvii., 237.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XLVI.—PROGNOSIS IN GENERAL BIRTH INJURIES

In the course of parturition some trauma to the female birth passages is almost unavoidable; usually this is slight and little or no appreciable discomfort follows, but in some cases the injury is grave and may produce varying degrees of disablement or even death.

The prognosis as regards the future health and fitness of the mother in such cases is influenced by many factors, of which the type of treatment adopted is of the first importance. It is this aspect of the matter that will be considered here.

DAMAGE TO PELVIC FLOOR

Damage to the pelvic floor is one of the most common of these lesions and the most usual variety is laceration of the perineum. The prognosis depends mainly on whether the perineal body and the levator muscle are injured and whether the laceration is promptly and properly sutured. It is not possible to perform a proper repair unless a good light is available and unless the limits of the laceration are clearly demarcated. If the laceration has involved the deep structures, a layer of deep interrupted sutures should be inserted in the first place. Merely to suture skin and mucosa will give no support however neat the wound may look. If this be done, even if some breaking down should subsequently occur, a strong perineal body will eventually result, as the perineal tissues have the faculty of progressive healing for several weeks. Immediate suture is especially necessary if the laceration has extended into the anal canal, otherwise rectal incontinence may ensue. In some apparently complete repairs everything may heal except a small fistulous communication a little way up the posterior vaginal wall, which may cause only an occasional leak of flatus or liquid fæces with corresponding social inconvenience. In this case a subsequent plastic repair is necessary, and in experienced hands nearly always gives satisfactory functional results.

REMOTE EFFECTS

The results of perineal damage may manifest themselves only in later years, at and after the menopause, by the occurrence of various degrees of pelvic floor weakness and prolapse. While the degree of probability of the occurrence of prolapse long after parturition cannot be foretold in any individual case, it is certain that the main predisposing factor to such an event is failure to effect repair of such tissues of the pelvic floor as may be damaged at that time.

The question arises whether a repaired perineum is likely to break down at future labours. The answer is that if the conduct of such labours is unhurried, in over half the cases no further laceration need be anticipated. Should it occur it can be resutured, but admittedly if this has to be done on several occasions the perineal tissues tend to become progressively weakened, with the corresponding probability of subsequent prolapse. In this connexion it has to be remembered that the perineal tissues may be stretched and weakened even in normal labour, without any surface laceration. In such cases the probability of prolapse later is considerable and nothing can be done to prevent it. In cases seen in later years when the various varieties of pelvic floor weakness—cystocele, rectocele, or prolapse—have developed the best prognosis lies in a properly planned repair operation. Only when consent is withheld or some contra-indication to operation is present should pessary treatment be advised. Pessaries cannot effect a cure of prolapse; they are mere vaginal mechanical supports which cause irritation and discharge and call for douching and periodical changing while they are often ineffective.

The type of operation required naturally varies according to the local condition, but in a complete prolapse treated by the Fothergill-Donald operation failure should occur in not more than 2 per cent. of cases (Fletcher Shaw), so that the prognosis as regards increased future comfort and efficiency is excellent.

RUPTURE OF VAGINA

Rupture of the vagina apart from perineal laceration usually occurs in the upper part of the postero-lateral wall. It is almost always due to undue force on the part of the attendant and may be associated with laceration of the cervix. The prognosis is grave on account of the peritoneum being opened, with prolapse of loops of bowel into the vagina. In half the cases the patient is too shocked to allow proper suturing and the best that can be done is to cleanse the vagina and the prolapsed bowel and to pack firmly. Seventy-five to eighty per cent. of these cases die of peritonitis within three days from the effects of trauma and associated sepsis.

LACERATION OF THE CERVIX

Some laceration of the cervix occurs in practically every full term labour and the late results of this lesion constitute about 70 per cent. of all cases seen in gynæcological clinics. Such laceration is usually slight in normal labour, but as the result of manipulations, especially with an imperfectly dilated cervix, deep lacerations may be produced extending up to the vaginal fornices and possibly involving the base of the broad ligaments. It is often said that the slighter degrees of cervical laceration heal spontaneously and are of no account (Whitridge Williams); but modern obstetric opinion does not favour this view. On account of trauma, muscular separation of the lips of the laceration, and superadded infection the lesion, however small, hardly ever heals but produces the common condition of chronic cervicitis with its numerous extensions and symptoms.

In all cases, then, of even slight laceration the prognosis as regards future symptoms and possible disablement owing to parametritis, metritis, or salpingo-oöphoritis may be serious, and when it is remembered that it is on the traumatised cervix that carcinoma is engrafted in later life, it is evident that in a certain small proportion of cases the prognosis is very grave. It is, however, impossible to prophesy which individual will do badly. Adequate prophylactic treatment is made difficult by the impossibility of suturing every small surface laceration after labour; a deep laceration can and should be sutured either then or some ten days later, but extensive lacerations are not common and are no more likely to be followed by chronic infective symptoms or by carcinoma than is a small and apparently unimportant tear. It cannot be over-emphasised that the prognosis in these cases depends not at all on the extent of the original laceration; the degree of trauma and subsequent infection are the important factors and can seldom be estimated at the time of labour.

INVERSION OF THE UTERUS

Inversion of the uterus is only rarely encountered even in hospital practice. In the last ten years I have seen only six cases. It may occur spontaneously but more often there has been excessive kneading of a slack uterus with a patulous cervix; traction on the cord is often quoted as a cause but it does not appear to have been associated with most of the recorded cases.

Prognosis is influenced by several factors :—

(1) The *acuteness of the condition.*—Should inversion occur before or immediately after the expulsion of the placenta shock is marked. Hæmorrhage may also be severe but the degree of shock has no relation to the amount of bleeding. Should the inversion not appear for several days the element of shock may be slight or absent with a correspondingly improved prognosis.

(2) The *supervention of sepsis.*—Should sepsis occur the outlook is usually bad, and as one of the main causes of this condition is strangulation of the inverted fundus by cervical constriction it is certainly to be feared.

(3) The *method of treatment.*—In general the uterus should be replaced in position under anæsthesia as soon as possible, but in extremely shocked patients such manipulation may only increase the shock already present and may be fatal. Nice judgment is required in determining the proper course of action, and the prognosis is greatly influenced by the wisdom of the obstetrician in charge of the case.

In general, the prognosis has been improved in recent years by better obstetrics; thus J. G. Crosse in 1843 reported 109 cases with 80 deaths, while the present mortality can be reckoned at 14 to 20 per cent. (R. D. Maxwell, P. Findlay, L. Beckmann). W. Zangemeister found that reposition within 1 to 24 hours after the inversion yielded the best results. Of our six cases in Cardiff all were replaced without difficulty, but two died, one of shock and one of sepsis.

RUPTURE OF THE UTERUS

Rupture of the uterus may occur in late pregnancy either spontaneously or through the scar of a previous Cæsarean section; it is then usually in the upper uterine segment. More often it occurs in prolonged and obstructed labour due to thinning of the lower uterine segment, and then the rupture is in the lower part of the organ. The prognosis for the mother is always grave and is influenced by the liability to shock, hæmorrhage, and peritonitis. The sooner laparotomy is performed, the fœtus and placenta removed, and hysterectomy performed, the better the outlook. If operation is undertaken within two hours of the rupture a case-mortality rate of under 40 per cent. may be anticipated, while after that interval the rate is fully 75 per cent. The nature of the rupture also influences the prognosis. In the complete variety into the peritoneal cavity a death-rate of 70 per cent. is to be expected, while in the incomplete variety, in which the rupture may not be through the peritoneum or may be into the base of the broad ligament, hæmorrhage is not so free and the mortality ranges from 15 to 20 per cent. Unsuccessful and traumatic attempts at delivery in obstructed cases influence the prognosis adversely by the production of bruising and laceration, with corresponding predisposition to subsequent sepsis. According to J. B. de Lee the prognosis in these cases depends on so many conditions that figures are practically valueless; in his series of 18 cases of complete rupture 11 died, while in 19 cases of incomplete rupture only 3 died. These and similar figures quoted by others are in general agreement with the prospects stated above. The fœtus is practically always dead, only three live cases having been reported.

FISTULÆ

That fistulæ are not common nowadays demonstrates, in spite of all that may be said to the contrary, improvement in present-day obstetrical practice. They usually occur after prolonged labour, and are produced by too prolonged pressure of the presenting part on a localised area of vaginal mucosa with subsequent sloughing; less commonly they are produced directly by instrumental perforation.

Rectovaginal fistulæ usually occur in the lower part of the vagina and represent an unhealed area in the upper part of a previous complete perineal tear; much more rarely they occur in the upper vaginal mucosa. The tendency in a rectovaginal fistula is always in the direction of healing, so that fully 30 per cent. will close spontaneously if given time. Operation therefore is not advisable within three months from parturition. When it is required, it usually takes the form of a complete perineal repair including the fistula and, with proper technique, fully 80 per cent. of such cases heal at once; in the upper vaginal fistulæ a plastic operation usually suffices, and only rarely is separation and suture from above by laparotomy required. It has to be remembered that even should the fistula break down after operation, the tendency to healing will remain so that in a few weeks over 50 per cent. of the cases will heal by granulation.

In *vesicovaginal fistulæ*, on the other hand, the conditions are reversed. The fistula is continually bathed in urine which may be infected, and the lips tend to become epithelialised so that spontaneous healing is not to be expected, and indeed occurs very rarely. A plastic repair operation is practically always necessary, and the likelihood of a breakdown with recurrence of the fistula is so great that cure cannot be promised. A number of operations may be necessary before the fistula is closed. Operation should be deferred until the edges of the wound are clean; the presence of bruising, of infected urine, or of phosphatic deposits on the fistula inevitably presage operative failure. The prognosis is influenced by the number of previous operative failures; thus A. Apajalahi found healing in 60 per cent. of cases after the first operation, in 30 per cent. after the second operation, in 24 per cent. after the third, and in 10 per cent. after the fourth operation, while no cases healed after the fifth operation. A review of statistics collected by Simon, Frank, Bey, Saenger, and others shows between 70 and 80 per cent. of operative cures in these fistulæ, but in the hands of those who are not specialists in this work not more than 50 per cent. of cures is to be expected.

CONCLUSION

It will be seen from what has been said how diverse may be the results and effects of genital birth injuries, and how multiple are the factors which influence us in arriving at a prognosis; also that the choice of appropriate treatment has an important influence on prognosis. The advantages of prevention over even the most satisfactory cure of any such injuries is obvious.

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SPECIAL ARTICLES

MEDICINE AND THE LAW

Damages for Negligence against Osteopath

THE award of £1500 damages against an osteopath last week (in Smith *v.* Lowry) shows once more the danger of ignoring the resources of X ray photography. The allegation of negligence against Captain Lowry, the defendant, was that in manipulating the left leg of the child Sheila Smith, he fractured the neck of the femur and caused a permanent restriction of the left hip. There was evidence that the child suffered previously from displacement of the left hip which an X ray photograph would have revealed, and that manipulation which would cause no injury to a normal child might fracture the thigh of a child suffering from displacement. Thus, as the judge observed to the jury, the taking of the photograph would have warned an operator that the patient needed to be handled carefully.

Captain Lowry lost his sight at Neuve Chapelle in 1914. He was the first blind man to qualify as a masseur from St. Dunstan's, and he has practised as an osteopath since 1925. He claims with justification to have developed a remarkable sense of touch. It was not suggested that his disability of sight caused the injury to the plaintiff. There was considerable conflict of testimony on matters of fact, but there was indisputable evidence in the form of radiograms. For seven weeks in July and August, 1930, Sheila Smith was under treatment at the Royal Free Hospital; a radiogram taken at this period showed a displacement of the right hip bone. Captain Lowry operated upon Sheila in August, 1931; a radiogram taken next day showed a fracture of the neck of the left thigh bone. There was no explanation of the fracture except that it occurred during Captain Lowry's manipulation. There was medical evidence that the girl is now crippled for life from the combined effect of the fracture and the earlier displacement.

The story of the mother was that Sheila had some form of rheumatism and had put on weight. Having read that Captain Lowry had cured a girl of over-weight, the mother took Sheila to see him. She said—though this he strongly denied—that he ridiculed the doctors' diagnosis of rheumatism, that he spoke of mistakes made by clever surgeons in London, and that he declared there were no signs of rheumatism but merely a slight dislocation of the left hip and a twisted intestine; this he said he could put right by a very slight operation. There was great conflict about the child's ability to walk. Seven witnesses said she could walk perfectly well; the girl herself said she went for a walk before the operation and climbed unaided on to the operating table. On the other hand, Dr. H. Chodak Gregory of the Royal Free Hospital was clear that Sheila had a noticeably "waddling" gait in 1930, and Captain Lowry's secretary noted on Sheila's case-card that the child was carried into his house for the operation in 1931 with great pain in her left leg. On August 25th the operation proceeded under an anæsthetic. The mother said she was present and heard a cracking sound, after which Captain Lowry remarked "that was a funny noise"; Captain Lowry denied this and said the mother was not present. There was apparently no dispute that the child was taken home in great pain, that the mother twice telephoned anxiously to Captain Lowry next day, and that he sent a radiographer to the Smiths' house and later sent a surgeon (Mr. Noel St. J. D. Buxton of King's College Hospital and the Royal Waterloo Hospital), whose subsequent treatment of the patient involved placing her in a plaster-of-Paris splint for three months and an operation in the following February to correct the position of the neck of the right hip bone. Captain Lowry also sent his wife to see Mrs. Smith soon after the radiographer's results had disclosed the fracture. The plaintiff apparently relied on some of these incidents as indicating that the defendant was conscious of unsuccessful treatment; they were equally explicable as manifestations of ordinary sympathy. Captain Lowry's version differed from Mrs. Smith's. He said that nothing untoward occurred while he was manipulating the patient's limb; that he used no violence but was merely making an examination; that he required an anæsthetic for the examination because the child was nervous; that he broke off his examination and told the anæsthetist that it was a case for a surgeon; that he was not at all perturbed about Sheila afterwards, and that he sent a surgeon to examine her out of kindness of heart, offering to waive his own fees and to pay the surgeon's fee, which Mrs. Smith could repay him later. In summing up to the jury, Mr. Justice Talbot observed that, if Captain Lowry's evidence was correct, certain passages in the evidence for the plaintiff must have been fabricated. The verdict of the jury indicates the belief that Captain Lowry caused the fracture and that he was at fault in doing so.

SIDELIGHTS ON THE CASE

Among other features of the case, not perhaps of special relevance to the jury's task, it may be noted that Captain Lowry, an unqualified practitioner, employs a duly qualified anæsthetist. As a general rule, he stated in his evidence, it was unnecessary to use anæsthetics in osteopathy. He was asked in cross-examination if it was within his knowledge that the British Osteopathic Association had constantly complained of his use of anæsthetics. He replied that it was untrue. In opening his defence his counsel stated that Captain Lowry was not going to expose his anæsthetist to disciplinary proceedings by calling him as a witness. Captain Lowry would sooner lose the case than let down the medical practitioner who has trusted him. Captain Lowry would not even disclose the doctor's name unless compelled by the court; he had the name in a sealed envelope and would hand it to the judge if so compelled. This was perhaps a forensic flourish of no great importance. Captain Lowry had doubtless given personal undertakings against disclosure to any registered practitioner who, with his eyes fully open to the risk, assisted an unqualified man. The court was not likely to compel the defendant in a civil action to call any witnesses whom the defendant for whatever reason decided not to call.

Captain Lowry's own status and qualifications were explained by him in the witness-box. He had attended lectures on anatomy at Middlesex Hospital and St. Thomas's Hospital while studying massage. He had not attended any lectures on surgery. He had formerly been a member of the British Osteopathic Association, but had retired after being summoned before that body to explain the appearance of his name in a newspaper. He had, it seemed, differed from the Association as to his right to advertise a book which he had written entitled, "From Mons to 1933." He was a member of the Incorporated Society of British Osteopaths. He denied that he had recently claimed, in lectures in America, the development of a sixth sense which enabled him to diagnose cases which medical men failed to diagnose. Mr. Justice Talbot, in summing up to the jury, said that Captain Lowry had evidently held himself out as having considerable skill; along with such claims went the duty to use care. The judge did not fail to express the admiration which all will share for the courage and success with which Captain Lowry, after losing his sight in his country's service, has addressed himself to a fresh career.

The case will no doubt be studied in relation to the legislative proposals for the recognition of osteopathy now under examination by a committee of the House of Lords, and reported in our Parliamentary columns.

Dangers of the Calender

That the possession of a calender machine may be a serious liability to a mental hospital was disclosed in an action tried by Mr. Justice Horridge on March 20th. A former employee in the laundry of the Goodmayes Mental Hospital, administered by the West Ham Borough Council, was awarded £695 damages and costs for injuries due to insufficient fencing, contrary to the provisions of the Factories and Workshops Acts, of the calender on which she was working. A calender is a wringing machine with hot rollers, which irons clothes as it dries them. Hitherto, in designing safety-gear, the makers and users seem to have assumed that the danger-point is the rollers. To prevent an employee's hand from being caught in these, the calender is fitted with a kind of shutter a few inches high, which extends across its whole width, and guards the approach to the rollers. The employee places the folded wet clothes on an arrangement of moving tapes which carries them beneath this guard to the jaws of the rollers; an incautious hand travelling with the clothes must press the guard back, and a movement of about an inch operates a trip mechanism which stops the machine. The story of how, in spite of this device, the laundry-maid sustained a broken little finger and extremely bad burns, necessitating the amputation of the little finger with its metacarpal bone, makes solemn reading for mental hospital governors. The employee saw a nightdress going in with one of the sleeves inside-out; she put her hand in to straighten the sleeve, but by this time the lower part of the sleeve had passed under the guard and was in the rollers; the sleeve tightened round her hand and she could not withdraw it. The guard of this machine, instead of being perpendicular, curved inwards towards the rollers about two inches. It operated the trip mechanism after her hand had moved it about an inch but, owing to the ordinary lag in the brake of the machine, the rollers moved onwards a little over an inch more after the power was shut off, and the gap left by the guard was sufficient to allow her hand to be pulled in until the little finger went either into or very near the nipping point of the rollers. That it was broken suggests that it was actually caught. Leading to the rollers there is a narrow hot plate at about the same temperature—well over boiling point; her hand was held tightly down on to this plate by the sleeve in which it was entangled, and she suffered ten minutes of what must have been excruciating pain before she was released. The hot plate rather than the rollers, as the judge remarked, was in this case the dangerous part of the machine which was insecurely fenced, and he suggested that such accidents could be avoided if the guard were placed so far from the plate that no hand could possibly reach it before the machine was stopped. Queerly enough, the calender is one of the few exceptions to the general rule that machinery is delivered to the user unfenced; in this case—perhaps in recognition of the inherent danger of the machine—the fencing is done by the makers themselves. This does not seem to be an isolated case; accidents with those machines are no rarity. The present decision is subject to appeal, but the possibility of having to pay heavy damages for the shortcomings of the safety-gear should induce mental hospitals and other institutions to take serious thought for its efficacy in the future.

Bequest to Non-existent Hospital

It is a pity that charitably minded persons sometimes omit to identify the institutions they desire to benefit. Last week Mr. Justice Farwell was asked to decide what should be done with a substantial legacy bequeathed to "the King Edward the Seventh Royal Hospital, London," there being no hospital of that name in London. The testator, Mr. William Hurst, of Little Hulton, in Lancashire, was a retired publican who had prospered in business, and whose bequest amounted to £42,440. So far as was known, he had never visited or subscribed to any hospital in London. He had frequently expressed his admiration for the personality of King Edward VII. and, as Mr. Justice Farwell observed, he must have supposed that there was some hospital in London named after him. Four institutions filed affidavits in support of their claims for consideration; in each case the judge found some ground for rejection. The King Edward's Hospital Fund was excluded because it was not a hospital. The King Edward VII. Hospital at Windsor was ruled out because it was not in London. The same objection was fatal to the King Edward Memorial Hospital at Ealing. The King Edward the Seventh's Hospital for Officers (founded by Sister Agnes) was a London hospital, but not a general hospital. Having thus disposed of the various claimants, the judge withdrew from the court to enable the parties to reach a settlement. Besides the four institutions already named, the next of kin was represented by counsel and, since he is officially interested on behalf of the public, the Attorney-General also appeared. On the judge's return to court it was stated that, subject to the deduction of a certain sum and the estate duty thereon which it had been agreed should be paid to the next of kin, his lordship would be asked to direct a scheme in Chambers for the administration of the fund. Mr. William Hurst, we must suppose, made his own will. It would have been the duty of his legal advisor, had he employed one, to see that the objects of his charitable intention were specified with certainty.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH UNIVERSITY

AT a meeting of the university court of the University of Edinburgh, the court and senatus resolved to present an address to the King on the occasion of the celebration of the Silver Jubilee. The court also agreed to grant permission to the Corporation to make arrangements for the flood-lighting of the dome of the Old College on the occasion of the celebrations. The principal, Lord Blanesburgh and Sir Norman Walker were reappointed as the university representatives on the curators of patronage for the period to Nov. 30th, 1937.

The court approved the regulations for the award of the Shaw Macfie Lang fellowship in 1935. The fellowship, of the annual value of £215 and tenable for two years, will be open for competition in [illegible], 1936, to graduates who have taken the degrees of M.B., Ch.B., with honours, in any of the four Scottish universities at a date not more than five years previous to July, 1936. The successful candidate will be required to undertake research work approved by the faculty of medicine. The court also approved of the establishment of a Sharpey Schafer lectureship in physiology, a fund for the endowment of this lectureship having been contributed by pupils and friends of the late Sir Edward Sharpey-Schafer. The first of the lectures, which will be given biennially, will be delivered in the summer term of 1935.

AN INSTITUTION FOR MENTAL DEFECTIVES

Dr. R. D. Clarkson's devoted work as medical superintendent of the Royal Scottish National Institution for Mental Defectives at Larbert is much appreciated in Scotland. Dr. Clarkson has for many years emphasised the need for a colony for *adult* defectives, and it is gratifying to know that such a colony has now been established under his supervision. At the annual meeting held recently he said that the report submitted was one of the most satisfactory in the 75 years of the institution's existence. The new adult colony will meet what has always been one of the great needs of the mental defective, for there are many, who after being trained to a certain extent, cannot be suitably provided for in their own homes and yet cannot be allowed to go out into the community. For these people the work on the farm and in the workshops of the colony affords an opportunity of feeling that they are doing some work that is worth doing, and it gives them a sense of satisfaction they cannot get in any other environment.

Dr. Clarkson does not think there is any adequate evidence that mental deficiency is increasing; he does not think there are any more mentally defective persons to-day than there were when he began his work forty years ago. He considers it cruel and inaccurate to maintain that mental deficiency is hereditary. Very few of the parents of the patients in the Larbert Institution are certified defectives. John Thomson, Leonard Findlay, and Charles M'Neil have all, he holds, proved that heredity plays only a small part in the ætiology of mental deficiency, and Dr. Clarkson is quite certain that a very large proportion of the cases are caused by injury to the brain at birth.

INFLUENZA IN 1934

A report published by the Department of Health for Scotland on incapacitating sickness in the insured population for the year ending June, 1934, analyses information extracted from medical certificates received by all approved societies operating in Scotland. Incapacities attributed to influenza numbered only 35,652, whereas the figure for the twelve months ending June, 1933, was 109,462. There was also a decrease in the incidence of bronchitis and pneumonia, but a definite increase in the amount of incapacity attributed to tonsillitis, scarlet fever, erysipelas, diphtheria, acute and subacute rheumatism, and superficial septic and inflammatory conditions. A striking feature of the statistics is the reduction of incapacitating illness among married women. In the past three years there has been an annual average decline of some 2000 cases of incapacitating diseases and this reduction does not apply to single women and men.

THE NATIONAL HEALTH

The report of the Department of Health for 1934, which has just appeared, shows a death-rate lower than any on record—namely, 12·9 per 1000. The principal causes of death were heart disease (11,427), cancer (7558), cerebral hæmorrhage (6618), pneumonia (4533), and tuberculosis (3704). The infant mortality-rate was 78 per 1000 registered births and is the lowest recorded. The birth- and marriage-rates showed a slight increase on those for the previous year, but the birth-rate is about half what it was sixty years ago. The maternal death-rate was 6·2 per 1000 live births, and is slightly higher than during the previous year.

More houses were contracted for and put in hand than in any year since State-aided housing began in 1919, and the output of completed houses in 1935 should be exceptionally high. An investigation was conducted by the Department to ascertain the views of tenants of local authority houses in the suburbs of large towns on the relative advantages of life in suburban and central areas. The views of 500 families were taken, and 429 families declared in favour of suburban as against city life. Consideration for the children was the outstanding reason for this preference for the suburbs, and a number of wives spoke of improvement in their husband's habits and sense of domestic responsibility. The most frequently expressed objection to living in the suburbs was that of travelling expenses, particularly where young boys or girls have to pay a large proportion of their small wages in fares.

The Department have watched for any evidence of the effects of unemployment on health. They could find no marked manifestation of ill-health or actual physical disease attributable to unemployment, but an abnormal prevalence of nervous conditions among unemployed men is reported. These nervous conditions tend to subside after long periods of unemployment.

EDINBURGH MATERNITY HOSPITAL

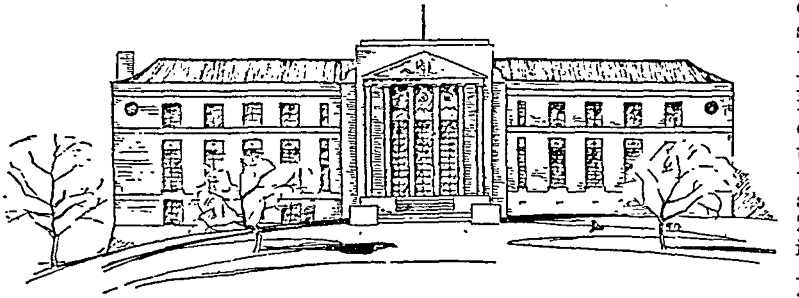
The Edinburgh Royal Maternity and Simpson Memorial Hospital held its 90th annual meeting last week. During 1934 the number of cases, intern and extern, treated by the hospital totalled 3500, and the visits to the antenatal and other clinics numbered 17,210. Of all the births in Greater Edinburgh during the year, 43·7 per cent. were dealt with in connexion with the hospital. As in previous years, the expenditure was greatly above the income, and the reserve fund had to be drawn upon to the extent of £3143.

WARRINGTON INFIRMARY AND DISPENSARY.—The finances of this institution have improved during the past year and the waiting-list of patients has been reduced from 330 to 180. Over 200 patients have passed through the nursing-home, which provides accommodation for 25 patients, private and semi-private, at fees ranging from three and a half guineas to five guineas. The cost per occupied bed in the infirmary was £143 2*s.* 8*d.* in 1934 as against £141 10*s.* 7*d.* in 1933.

ROYAL WATERLOO HOSPITAL.—The 110th court of governors of this hospital was held at the Mansion House on March 18th. Sir Stephen Killik, Lord Mayor of London, who presided, said that till the London County Council decided on its programme of development in the area to the south of Waterloo Bridge nothing could be done in the matter of the hospital's new out-patient department. During the past year 15,490 new out-patients who had been treated registered 80,747 attendances. The hon. treasurer said that the accumulated deficit of the hospital had increased to £4845 during the year. Dr. Gerald Slot spoke of pioneer work lately done at the hospital on the gold treatment of rheumatism.

ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

ON the afternoon of March 4th the door of the College's new building at Melbourne was opened by Sir Holburt Waring, P.R.C.S. Eng., with a golden key given to him by Mr. L. F. Irwin, the architect. Sir Henry Newland, president of the college, took the chair at the meeting which followed, when Sir Holburt read messages of congratulation from the King and from the Royal College of Surgeons of England. Sir Henry Newland expressed thanks to Sir Stanley Argyle, the premier of Victoria, and to Mr. Hogan, a former premier, for granting the College the lease of the site at an annual rental of £1. In reply, Sir Stanley announced that the surrounding gardens were to be maintained by the city council and that he had been asked to name them College Gardens. An address entitled How Surgery came to Australasia was then given by Sir D'Arcy Power, another of the visitors from England.



In the evening Sir William Irvine, lieutenant-governor of the State of Victoria, opened the eighth annual meeting, and reminded his listeners that on the last occasion when he had done so, in 1932, Mr. C. H. Fagge had presented the silver mace which he had brought from the Royal College of Surgeons of England as a gift from brothers to brothers. Sir Henry Newland proceeded to confer the honorary fellowship of the College on Sir Holburt Waring and Sir D'Arcy Power (representatives of the Royal College of Surgeons of England), Mr. Henry Wade and Prof. J. Fraser (of the Royal College of Surgeons of Edinburgh), Dr. D. C. Balfour (president-elect of the American College of Surgeons), Dr. Dean Lewis (professor of surgery at the Johns Hopkins Medical School, Baltimore), Mr. C. F. M. Saint, F.R.C.S. (professor of surgery in the University of Cape Town), and Mr. F. Wood Jones, F.R.C.S., F.R.S. (professor of anatomy in the University of Melbourne). Sir Holburt afterwards presented the Jacksonian prize of the Royal College of Surgeons of England for 1933 to Dr. E. S. J. King, of Melbourne.

Prof. Wood Jones, delivering the third George Adlington Syme oration, spoke on the Great Master Surgeon, a type which, he said, specialisation and improved technique had, since about 1850, made less easy to recognise. He believed that though anæsthesia and asepsis had now made surgery comparatively easy and safe for all competent operators, the inspired master did exist to-day though he might be hidden among the many.

From March 5th to 8th scientific meetings, discussions, and demonstrations were held, including lectures by Dr. Balfour (the surgical treatment of duodenal ulcer), Prof. Edward Archibald (the operative treatment of pulmonary tuberculosis), Mr. Henry Wade (renal tumours), Mr. S. Harry Harris (posterior segmental block-excision of the bladder-neck with primary closure), Dr. Dean Lewis (ovarian hormones and their relation to breast tumours), Sir Louis Barnett (deaths from hydatid disease), Prof. John Fraser (lipoid disease of bone). A discussion on post-graduate education in surgery was opened by Sir Holburt Waring, Prof. Saint, and Mr. Alan Newton, and a report on the results of the treatment of carcinoma of the breast was presented by fellows of the College.

HISTORY OF THE COLLEGE

The formation of an Australasian College of Surgeons was suggested by Sir Louis Barnett in 1920 in a letter to the section of surgery of the Australasian medical congress which was being held at Brisbane; but the proposal was rejected. In 1924 Dr. William J. Mayo and the late Dr. Franklin Martin visited Australia and offered the fellowship of the American College of Surgeons to some of the leading Australians. When the newly elected fellows attended the next annual meeting of the American College they were impressed by the importance of its work, and on their return decided to revive the proposal to found a corresponding institution in Australia. After preliminary meetings a conference of delegates from the chief Australian States and from New Zealand was held in Sydney in August, 1926, and a provisional executive committee was elected which drew up a constitution for the new college. The first annual general meeting was held at Canberra in 1928 under the presidency of the Lord Stonehaven, the governor-general of Australia. Sir John Goodwin, F.R.C.S., the governor of Queensland, and Mr. Victor Bonney, who attended the meeting on behalf of the Royal College of Surgeons of England, were elected the first honorary fellows of the College. Sir George Syme was its first president; when he died in 1929 Sir Henry Newland was elected in his place, and it has recently been announced that Mr. R. B. Wade of Sydney has been elected to succeed him as third president.

The last years have seen a rapid growth. In 1930 the King granted the College permission to prefix Royal to its title and this was followed by a grant of arms. In 1931 it was decided to erect headquarters, and it was agreed that this should be situated in Melbourne. The building which has just been opened is free of debt and has been designed so that future extensions can be readily undertaken. It occupies a central position in Melbourne, standing near the University, while the Melbourne Hospital, the Children's Hospital, the Women's Hospital, St. Vincent's Hospital, and the Eye and Ear Hospital are in the same neighbourhood, and the Alfred Hospital, Prince Henry's Hospital, and Queen Victoria's Hospital may easily be reached by tram.

In 1931 and in 1934 the Australasian College coöperated with the Royal College of Surgeons of England in holding the primary fellowship examination of the English College in Australia, and it is hoped that examinations may be held in Australia and New Zealand at regular intervals. The friendly intercourse was continued when Mr. C. H. Fagge, on his visit in 1932, delivered the first George Adlington Syme oration and was made an honorary fellow. Last year Mr. Gordon Gordon-Taylor, who went to Melbourne as an examiner in anatomy for the primary fellowship examination, received a like honour.

As the possession of a senior surgical qualification is one of the requirements for the fellowship the College has been able to obtain uniformity in the regulations governing admission to senior surgical degrees of the Australian universities. A period of surgical apprenticeship is also an essential part of the training for the fellowship, and the College has therefore asked many of the large hospitals of Australia to create non-resident positions as assistants to indoor surgeons which are intended for men who have already been house surgeons and who wish to continue their surgical training with a view to becoming fellows. An agreement has been made with the Prince Henry's Hospital, Melbourne, whereby this hospital will function as a post-graduate school of surgery in collaboration with the College.

Application for admission to the fellowship of the College is made to the censor-in-chief who presides over two boards of censors, one in Australia and one in New Zealand. The censor-in-chief considers the qualifications of each applicant—a senior surgical qualification and a period of surgical apprenticeship are essential—and if he thinks fit asks the candidate to present himself to the appropriate board of censors for an oral examination. Fellowships with ophthalmology and laryngo-otology have been instituted and are governed by similar regulations. The original system of admission to the fellowship was somewhat different, and the revised system was introduced in 1934.

Soon after its formation the College founded a journal which has been published quarterly since 1928, at first under the title of the *Journal of the College of Surgeons of Australasia*, and since 1931 under the name of the *Australian and New Zealand Journal of Surgery*. The journal is edited by a committee under the chairmanship of Mr. H. B. Devine.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. A. G. Bee to *Drake* for R.N.B., and A. Craig to *Pembroke* for R.N.B.

Surg. Lt.-Comdrs. H. J. McCann to *Victory* for R.N.B., J. A. Cusack to *Dorsetshire*, and A. R. Ewart to *Leander*.

Surg. Lt.-Comdr. (D.) J. M. Park to *Excellent*.

ARMY MEDICAL SERVICES

Col. M. F. Grant, late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. D. F. Mackenzie, D.S.O., from R.A.M.C., to be Col. (Col. Donald F. Mackenzie, D.S.O., on medical duty in the Aldershot Command, is 54, and has been in the R.A.M.C. since January, 1907.

ROYAL ARMY MEDICAL CORPS

Maj. A. Jackson to be Lt.-Col.

Capt. (*local* Maj.) J. C. Gilroy relinquishes the local rank of Maj. on ceasing to be empld. with the Trans-Jordan Frontier Force.

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. F. B. Dalgliesh, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

H. Dickie (late Offr. Cadet, Glasgow Univ. Contgt. (Inf. Unit), Sen. Div., O.T.C.) to be Lt.

D. R. Hood to be Lt.

Supernumerary for service with O.T.C.—Lt. F. L. Ker, supern. for serv. with Med. Unit, Edinburgh Univ. Contgt., Sen. Div., O.T.C., to be Capt. (Substituted for the notification in the Gazette of March 12th, 1935. *Vide* THE LANCET, March 23rd, p. 704.)

ROYAL AIR FORCE

The undermentioned Flight Lieutenants are promoted to the rank of Squadron Leader: A. F. Cook and E. Thompson.

Flight Lts. P. D. Barling to R.A.F. General Hospital, Hinaidi, Iraq; P. J. McNally to R.A.F. Institute of Pathology and Tropical Medicine, Halton.

INDIAN MEDICAL SERVICE

Lt.-Col. A. F. Hamilton, C.I.E., retires.

Major T. J. L. Thompson, M.C., R.A.M.C., has been appointed as officiating D.A.D.M.S., Eastern Command.

DEATHS IN THE SERVICES

The death occurred on March 25th, suddenly, at sea of Surg. Capt. Sidney Roach, R.N., retired, formerly medical officer of the Royal Naval College and Royal Hospital School at Greenwich. He qualified M.R.C.S. in 1897, having studied at St. Bartholomew's Hospital and took the D.T.M. & H. in 1921. He entered the Navy as a surgeon on May 25th, 1897. He served in the sloop *Alert* on the North American station, and at Bermuda naval hospital, and was promoted to staff surgeon in 1905, in which year he joined H.M.S. *Cambridge* at Devonport. Later he was medical officer of the R.M. garrison at Ascension of the cruiser *Indefatigable* in the West Indies; and of Chatham Barracks. During the war he was officer of the cruisers *Devonshire* and *Roxburgh* submarine depôtship *Bonaventure*. Then he the *Defiance*, torpedo schoolship at Devonport he entered the service of the Harrison Line, and board one of their vessels that he died. He home at Brading, Isle of Wight.

Lt.-Col. Francis George Adye-Curran died residence, Esker House, Rathmines, Dublin, on M at the age of nearly 90. Born in Dublin in 1845, and educated at Trinity College, he obta M.D. Dub. in 1867, became L.R.C.S.I. in the sa and F.R.C.S.I. in 1887. Early in life he joined t Medical Service and retired in 1893 with the Lieutenant-Colonel. He then engaged in private in Rathmines, Co. Dublin, and remained in pra to his final illness, being probably the oldest practitioner in Ireland. During the war he retu the Army although past 70 years of age at the ti served for a time in India. Col. Adye-Curran l for many years a director of the Apothecaries' Ireland, of which he was for a time governor; represented the Apothecaries' Hall on the General of Medical Education and Registration from 1905

CITY OF LONDON MATERNITY HOSPITAL.— the last year 1683 mothers were admitted in hospital and 210 were delivered in their homes. the exception of emergency cases sent in by officers antenatal supervision and treatment were where necessary, and postnatal clinic was arrang the care of the mothers when they left the ho The improvements which have been carried out duri year include the erection of a new operating th with adjoining sterilising room, but the hospital rec another £1000 a year if it is not to fall into debt.

KETTERING GENERAL HOSPITAL.—The increa the year's work at this hospital is the largest i last seven years, for the total number of cases, 2 exceeds those of 1933 by almost 7000, and is a double the number recorded for 1928. There wa excess of income over expenditure amounting to The total amount received from the hospital guild we contribution scheme was £7331, which was a rec The £10,000 appeal towards the cost of alterations and extensions is progressing satisfactorily. The daily average number of occupied beds was 76·25 as compared with 65·78 last year, and the average cost per patient (excluding out-patients) was £9 10*s*. 7½*d*., a decrease of 1*s*. 3½*d*. on the previous year.

PARLIAMENTARY INTELLIGENCE

OSTEOPATHS BILL

Select Committee's Inquiry

(Continued from p. 754)

THE Committee's inquiry continued on Friday, March 29th, and Monday, April 1st, with Lord AMULREE in the chair.

Sir William Jowitt Presents his Case

Sir W. JOWITT, K.C., principal counsel for the British Medical Association, addressed the Committee on their behalf. He said that the number of people in this country practising osteopathy and calling themselves osteopaths was estimated at between 2,000 or 3,000. Among them was a select body numbering 179 who stood in a somewhat different category. The hypothesis upon which the Bill was put forward was this: the unqualified osteopaths were doing some public harm, and it was therefore desirable that the present state of affairs should be brought to an end. The 179 qualified osteopaths were divided into two categories. Some 96 of that number were "old boys" of the British School of Osteopathy, and the other 83 had some American qualification. Of the 83, as far as the evidence went, roughly half were Americans and on the evidence American medical degrees were not accepted in this country. The proposal of the Bill was that all persons practising osteopathy to-day should come on to a register, subject to the point which Lord Elibank and the promoters would consider later as to how far subsection (iii) of Clause 6 (1) would involve examination.

WHERE THE BILL BREAKS DOWN

There might be occasions where it was necessary or desirable that the State should put upon a register persons who were not qualified, in spite of the manifest disadvantages of such a course. There might be compelling reasons such as those which operated in the cases of the dentists and the veterinary surgeons. The most important reason was the certainty that after the register had been set up everyone who went on the register would have to be properly and adequately qualified, there being in existence all the necessary schools and methods of teaching to secure that result. But was it certain that a corresponding advantage would be secured in the case of the osteopaths? Was it certain that from the moment the register was established everyone who practised osteopathy would be properly trained and properly qualified, so that the danger to the public which existed to-day would disappear? From that point of view he thought that the present Bill broke down altogether. The promoters were putting the cart before the horse. The Minister of Health had said that the first thing for the osteopaths to do was to get a proper school, and to set up a proper system of training. If they had done so they would have come before their lordships and said that they had a great deal of public support; they had a creditable school and hospital, and could claim that their system of education was comparable to that of the medical curriculum. In such circumstances their lordships might have said that they would permit a little wrong by putting unqualified people on to the register for the sake of the great good that would thereafter be achieved. But what would actually happen under this Bill? Dr. Kelman Macdonald had stated that there was no reputable school of Osteopathy in this country except the British School of Osteopathy. He (counsel) did not want to say much about this school, or about its dean, Dr. Littlejohn, but one thing at least was plain: it could not be regarded as in any way satisfactory, nor did he regard it as reputable. Dr. Littlejohn, he would say quite plainly, was not an honest man, and if there was to be a satisfactory educational system for osteopaths in the future, the less he had to do with it the better. If, on the other hand, there were more people like Dr. Macdonald, and it was possible to get some of them to give their time and attention to the school and develop a hospital in connexion with it, then he could imagine that their Lordships might approach this Bill from a different point of view. It was significant that Dr. Macdonald and his Association had never recognised the students of the British School of Osteopathy, and he hoped they never would. But in those circumstances to come to Parliament and ask the State to recognise that which Dr. Macdonald would *not recognise*, knowing that the only prospect of osteopaths being educated in the future was through the British School of Osteopathy, was to ask something which was quite impossible.

No one doubted that there were many cases in which osteopathy was very valuable, but the claim put forward in the Bill was a very wide claim. Parliament was asked to allow people to be put on the register to treat all diseases. Not one single witness had been called who treated acute diseases. There was no evidence that any osteopath in England treated acute diseases. Mr. Streeter and Dr. Macdonald had what they described as office practice. If they were going to say that the State recognised osteopaths as fit to treat these diseases, why should they hesitate to say that they should be able to sign death certificates? The reason why a medical man could treat diseases better than a layman was because he knew something about diagnosis.

NON-SECTARIAN TRAINING

The function of education, continued Sir William, was to enable a man to think for himself, and it was a mistake to start the student from a prejudiced point of view by indicating to him that he was never going to use drugs. The doctor had both a professional and a financial interest in getting a reputation for curing his patients, and if this osteopathic theory was right, why did the doctors not accept it? They understood it. The young men coming from the universities and medical schools to-day were in a position to judge. The right solution was to let these people take their medical degrees, and afterwards carry on their researches in any way that they liked, as they were perfectly entitled to do; the British Medical Association would deplore any ostracism of a man like Dr. Kelman Macdonald. The Bill if passed, Sir William concluded, might do a grave public injury by duplicating machinery and setting up a second register. Wherever this happened the tendency was for the lower qualification to be taken, and at a time when medical education ought to be improving they would deliver it a blow and send it backward.

Sir Henry Brackenbury's Evidence

Sir HENRY BRACKENBURY, vice-president of the B.M.A. and a member of the General Medical Council, next gave evidence. Examined by Sir WILLIAM JOWITT, he said there was now a movement by the Council to place the whole of general biology in the pre-medical stage, so that the real five years' education would begin after the student had taken physics, chemistry and biology. Replying to the CHAIRMAN, he said that from the time of the ordinary matriculation examination it took a student two years to prepare for the five years' medical course.

COUNSEL: There is plenty of scope for a man to continue to learn after his name has been placed on the Register?—WITNESS: He must do that, otherwise he will be not merely a scientific failure, but a financial failure too.

COUNSEL: A man like Dr. Kelman Macdonald can practise osteopathy?—WITNESS: He can practise anything he likes.

COLLABORATION WITH OSTEOPATHS

COUNSEL: Would you have the slightest hesitation in consulting or using a man like Dr. Kelman Macdonald?—WITNESS: No; not in the least.

Lord ELIBANK: Does that apply to all your profession?

—WITNESS: There would be no feeling against consulting Dr. Macdonald because he was practising as an osteopath. That is to say, being on the Medical Register there could be no question about the appropriateness of any medical practitioner consulting him if he wished to do so. There is this distinction against general consultation with a person on the Medical Register who is practising osteopathy, as there is with persons who are practising homœopathy—that if I wish a consultation with a colleague the value of that consultation is likely to be less if I know beforehand that he has adopted a fixed and restricted method of looking at things.

Later Lord ELIBANK asked: Have you yourself ever used an osteopath or invited the coöperation of an osteopath in any of your cases?—WITNESS: Probably in the sense in which you mean it, no. I have had a number of patients who have expressed a desire to see an osteopath about certain conditions and I have never placed the slightest obstacle in their way.

Lord ELIBANK: You have not advised them not to go?—WITNESS: Never.

Replying to a question about Dr. Macdonald's complaint of his difficulty in obtaining an autogenous vaccine in Edinburgh, Sir Henry Brackenbury said: "In that case Dr. Macdonald was treated very badly, and in a way he should not have been treated." No medical man was obliged to associate himself with or consult with any other medical man if he did not wish to do so, but if the conduct complained of had been brought before the British Medical Association they would have said to the person concerned, "You acted very impolitely and very improperly."

Lord ELIBANK asked why Dr. Axham was struck off the Register for acting as anæsthetist to an osteopath, when at the present day a doctor could coöperate with an osteopath without coming to any harm.

The Witness, after explaining that Dr. Macdonald was a registered medical practitioner, pointed out that what the General Medical Council was anxious to do was to prevent "covering." If, habitually, a registered medical practitioner helped an unqualified and unregistered practitioner to carry on his practice by just coming in to help him to do those things which the State said must only be done by a registered medical practitioner, then he was liable to be called up and judged for an offence. The offence was that of enabling an unqualified person to carry on his practice as though he were a registered person.

Continuing his evidence the witness mentioned that there were a number of general practitioners who practised manipulative surgery in the colliery areas. Replying to Lord ELIBANK, he said that these practitioners learned manipulative surgery in the medical schools, but their skill in the art developed with the experience they had in daily practice.

Lord ELIBANK: Is the subject in the curriculum of the medical schools?—WITNESS: It is compulsory. It has been emphasised very much since the General Medical Council made its last revision of the medical curriculum in 1926. Since then the emphasis placed on the teaching of manipulative surgery has been very much increased.

The witness went on to speak of the great difficulty of differentiating between major and minor surgery, and said that if any attempt was made to bring in a class of persons who might practice minor surgery, but not major surgery, it would be necessary to have a tribunal constantly sitting to say whether a man had or had not exceeded the powers given to him. Speaking of the wide general knowledge required for making a correct diagnosis, he said that the diagnosis spoken of did not seem to cover the same thing in the two cases. It seemed to him, as he had listened to the evidence, that the osteopath's diagnosis was merely directed to the location of a special osteopathic lesion. The osteopath's point was not whether a person had bronchitis, or pneumonia, or gall-stones, or appendicitis, but whether the basic cause of his disease was in the second or seventh dorsal vertebra. The doctor's diagnosis might or might not have something to do with the spinal column, but it was directed to form an exact a picture as possible as to what was going on in the patient's body.

A VOLUNTARY REGISTER.

The witness referred to the Chartered Society of Masseurs as having a voluntary register which was widely recognised both by the profession and the public. This was a very good example of a voluntary register. A registered masseur or a masseuse could not treat a patient without going through a doctor. That was because massage otherwise might be entirely misdirected. Masseurs did not regard themselves as competent to diagnose cases in which massage was the correct treatment. When a skilled person had decided that massage was the right form of treatment, then the masseur was the right person to give that treatment.

THE AMERICAN PARALLEL

In answer to further questions by COUNSEL, the witness said that if the situation were the same as it is in the United States the B.M.A. would withdraw its opposition; the Bill would be a necessary thing. In the U.S.A. no one was allowed to practise the healing art unless he was on a register recognised by the State. The English system, on the other hand, was to have one recognised minimum qualification, and allow anybody else to practise as they pleased. He thought there were probably 25,000 unregistered persons in this country who in some form or at some time were in fact practising. But in these circumstances State recognition involved the picking out from among all the cults one or more for registration.

"It seems to me," said Sir Henry, "that we must either have a British system of complete liberty for the public and for those who wish to practise any healing art—with State recognition on one minimum qualification only—or we must adopt fully and completely the American system of prohibiting the practice of healing by anyone who is not on a State register. Then you must have a number of State registers in order that the public may be able to exercise their choice . . . As soon as under that system the State recognises one or more forms of healing it is bound, I think, to place those forms of healing at the disposal of the public in any State arrangements that it makes for dealing with public health . . . The chaos—I do not think I am putting it too high—that would be caused in public health administration by the recognition of more than one register under the English system would be so great as to be almost impossible."

The WITNESS then described the position in the United States and Canada as he had studied it on a visit to those countries. In the U.S.A. there were 142,000 trained medical practitioners and 36,000 others, namely, 7680 osteopaths, 16,000 chiropractors, 2500 naturopaths and 10,000 Christian Scientists. These figures were taken from the report of a committee partly governmental and partly representing the American Medical Association. There were a bewildering number of differences between the arrangements made in the various States. Thus, 8 States of the Union gave osteopaths a limited right to use certain drugs, whereas in 17 they might not use drugs without special licences for individual cases.

COUNSEL then referred the witness to a publication, No. 16 of the Committee on the Costs of Medical Care, by Louis S. Reed, Ph.D., in which the following passage occurred: "In point of numbers the growth of osteopathy has practically stopped. The failure to grow is probably due for the most part to two things—chiropractics and evolution of osteopathy." The report, the witness said, was published a year or just over a year ago. As the result of investigations from year to year regarding the number of osteopaths practising in the United States, it was shown that for the last few years they had been to all intents and purposes stationary.

Lord ESHER: Have you deduced anything from the decline of osteopathy in the United States?—WITNESS: The best osteopaths have approached so near to the medical standard that those who wish to go in for that form of healing take the whole medical course rather than take something which costs them nearly as much and takes nearly as long, whilst they find themselves having taken the full Medical Course with a greater status . . . . . . With regard to those who are not so scientific and earnest—and I think I include the majority—the tendency has been rather to go over wholesale to the chiropractors' field, because they can do the thing much more cheaply in a shorter time, and they can hold out all sorts of wild promises of cure which the best of the osteopaths would not feel themselves able to do.

DIFFICULTIES IN THIS COUNTRY

Sir W. JOWITT, having resumed his questioning on the attitude of the B.M.A., the witness said that if they were to consider the economics of the proposed registration, he would say that the medical profession would probably benefit from it rather than otherwise. The opposition was not influenced by any feeling that the Bill was going to harm the medical profession.

COUNSEL: You do not oppose as such the compilation of a register?—WITNESS: Not at all. It would be useful and would enable the public to distinguish between those who had a training and those who had not.

The witness added that a State recognition involved something in this country which was quite different from the existing State register in the United States. We had to start here with the knowledge that anybody may practise healing without doing anything illegal at all, provided he did not pretend to be a registered medical practitioner. There was no necessity here for a register, for a State recognition in order to supply a public demand. On the other hand, if the State chose to pick out one or more particular cults for State recognition, that involved in this country a responsibility and consequences which were quite different from the necessary registration of the various schools of thought in America. It involved the giving of a cachet or authority to theories and beliefs which were unaccepted by almost the whole scientific world. There was a very considerable section of the public who thought that the stamp on patent medicines was a State guarantee that the medicine would do all that was claimed for it.

In answer to Counsel's questions, the witness said that, as far as the increasing recognition of the importance of manipulation and the increasing recognition of the limitation of drugs were concerned, he would like to give the osteopaths every credit for having emphasised those points. They were not new points, because the evils of indiscriminate drugging, and the value of surgical manipulation had been acknowledged and practised in medicine before the time of Still.

COUNSEL: You pay a high tribute to manipulative surgery, but it is to the extent of the claims that the osteopaths are making that you now raise your objection?—WITNESS: Yes, entirely. They are asking recognition over the whole field of medicine.

State recognition, he added, would involve the use of registered persons for State purposes—for poor law, national insurance, infantile welfare and school-children.

Lord ESHER: There would be no objection to that if the basic principle of osteopathy was true?—WITNESS: If the basic principle was true there would be no other register but the osteopathic register, as the Medical Register would be wiped out.

A QUESTION OF BIAS

The Witness said the four years' osteopath's course would compare with a six years' medical course, or the five years' course would correspond with a seven years' medical course. From the beginning, moreover, there was a bias in the minds of the students.

CHAIRMAN: Is not the medical education biased?—WITNESS: No. It is unbiased in so far as it teaches the basic facts of the science of medicine. You can say that those who conceive the world to be round are biased as against those who believe the world to be flat, but I do not think you can take the belief that the world is round to be a biased belief.

Lord ESHER: That is only because you believe it to be true.

The witness did not think that the establishment of an osteopathic register could profitably lead to personal collaboration in general between osteopaths and registered medical practitioners. Indeed, the effect would be all the other way. He would know, as a medical man, that any one whose name was on the osteopath's register had had from the beginning a biased education, and had established in his mind certain fixed ideas.

Lord ELIBANK: Have you no fixed ideas on medical science or treatment?—WITNESS: No, except in the sense that if a fact seems to be established I should accept it for the whole or almost the whole of the scientific world. I should hold it to be the right of any man on the Medical Register to take any view he likes.

Lord ELIBANK: You say there is no probability of collaboration between the osteopath and the medical profession under this Bill, and you say the osteopaths are doing good work in the community?—WITNESS: A number of them in a limited field.

Lord ELIBANK: Can you help the promoters of the Bill by telling me how we can bring about that collaboration which I want and from what I gather you want too?—WITNESS: In my belief this Bill will not lead in that direction but in the opposite direction. At present I, as a medical man, have my liberty without transgressing any medical law or rule of the General Medical Council to consult with and use any one in the world that I can with reference to the welfare of my patients, so that there is nothing to prevent any collaboration between myself and an osteopath or anybody else.

Sir Henry Brackenbury Cross-examined

Mr. MURPHY, counsel for the promoters of the Bill, questioned Sir HENRY BRACKENBURY about the authenticity of the figures relating to the United States which had been spoken to by the witness. Sir Henry said he did not think that there was Government responsibility for the publication which had been quoted but the Government had representatives on the Committee. Council suggested that the book was simply a publication of an individual member of the Committee expressing his own views. The witness disagreed. He did not think the author (Dr. Reed) was a member of the Committee, but he took it that in accordance with the procedure indicated the report had been submitted in its final form to each member in order that he might express his dissent for it if he desired to do so. No such dissent was expressed.

COUNSEL: You tell me that, and of course I accept it as your view, but I suggest to you that there is nothing in this publication from beginning to end to show that it has received the approval of the committee.—WITNESS: I have never claimed that it has.

One of the reasons given for a lack of increase in the number of osteopaths in America, Sir Henry agreed, was the rise in osteopathic standards. This rise had been brought about in a number of States according to the writer of the book, by State action. But except in those nine States which had recently enacted Basic Licence Laws, there was no legislation involving the raising of the standard of osteopathic education. The standard education had been raised by the action of the osteopaths themselves.

COUNSEL: Will you take the view that there being a large number of persons practising osteopathy in this country it is highly probable at least that if certain definite standards and qualifications are insisted upon and enforced you might find a smaller number practising osteopathy, but a much better qualified number of persons?—WITNESS: Yes.

COUNSEL: That is not merely highly probable but almost inevitable?—WITNESS: One of the results.

The Witness said the B.M.A. possessed figures which reached the conclusion stated by a witness last week that osteopathy was dying in the country of its birth. The figures indicated a stoppage of the increase. He promised to let the Committee have the figures.

The Witness said he was satisfied to leave things as they were in this country, even at the risk of people resorting to persons who were not qualified. He preferred the English system to the American system. He did not think it was an undue risk to retain the present liberty.

COÖPERATION AND COVERING

On the question of coöperation with osteopaths, Sir Henry reiterated his belief that such coöperation would be futile.

Lord Elibank: Dr. Macdonald has medical training and has since become an osteopath. Does that mean that he has adopted a fixed idea, and how can you reconcile what you say about coöperation ?—Witness: As far as I am concerned that objection would hold with Dr. Macdonald. I can conceive of a number of cases under my responsibility in which I might have Dr. Macdonald to do manipulation, but knowing that Dr. Macdonald has adopted certain fixed ideas this would weigh with me in deciding whether coöperation with Dr. Macdonald would be valuable.

Counsel: You have not the same confidence in Dr. Macdonald because he has studied osteopathy ?—Witness: Dr. Macdonald has a perfect right to adopt any view. He is very likely right and I am very likely wrong, but if I believe that the principles on which he acts are not true that prevents useful coöperation between him and me.

Later Counsel said: The osteopath whom you believe to be performing a certain useful function could require somebody occasionally to administer an anæsthetic. If a doctor administers an anæsthetic for an osteopath and complaint is made to the General Medical Council the matter is taken up and that medical man is in considerable jeopardy ?—Witness: That case has to be dealt with on its merits by the General Medical Council. He is in some jeopardy.

Counsel: Although he has only assisted a man in doing something which, having regard to the principles of English liberty, he is perfectly entitled to do ?—Witness: No; that is not quite right. You must not ask me to prejudge cases which, as a member of the General Medical Council, I may have brought before me . . . . I have no doubt that if a registered medical practitioner accepted a salary from an osteopath to give an anæsthetic for an unregistered osteopath, the liability being habitually to administer anæsthetics, there would be a serious liability that that person would be put off the Register. As things stand at present the medical practitioner who gives an anæsthetic knows that his name may come before the Council and be erased from the Register.

Counsel: If an anæsthetic is administered at all it is desirable that it should be done by a medical practitioner ? —Witness: Fortunately that is one of the theories regarding which the public has shown sense.

Counsel: A registered medical practitioner giving an anæsthetic for the purpose of enabling an osteopath to carry out a useful piece of healing may find himself in considerable jeopardy ? Witness: Yes, but I should like to qualify that. The only reason would be if by so doing he was enabling an osteopath to treat patients as though he were a medical practitioner. If the charge were not proved up to that point he would be in no jeopardy. . . . .

Lord Elibank: If the medical practitioner wants to give anæsthetics regularly he would come within the rule ?—Witness: He might and he might not. The charge has to be that the registered medical practitioner is assisting an unregistered person to treat patients as though he were a registered medical practitioner. It depends on the Council whether that charge is held to be proved or not.

Counsel suggested that, in view of the difficulty of knowing what might be the consequences, the vast majority of medical practitioners would be on the safe side and not administer the anæsthetic for an osteopath. To which the witness replied that the vast majority of medical practitioners never had been and never would be asked to do so.

After questions about the theory underlying the practice of osteopathy, Counsel quoted the witness as saying he would not regard belief in the roundness of the earth as a bias. Assuming for the purpose of the question that the round-earthers were the medical profession and the flat-earthers were the osteopaths, he suggested that it would be unreasonable and useless to ask a flat-earther to spend six or seven years in an educational establishment of round earthers before going to an educational establishment of his own. The witness said that no man with a fixed idea could get it removed unless he had some sort of scientific education.

Further Questions to Sir Henry

Mr. Dickens (Counsel for the B.M.A.) then put a number of questions. In the course of his replies the witness said he would not hold it improper for him to give an anæsthetic for an unqualified person if the responsibility for the case remained with himself or any other registered practitioner.

TWO STATE REGISTERS

In describing the disadvantages which would attend the setting up of two State registers in this country, the witness instanced the difficulty of establishing a criterion of incapacity for work under National Health Insurance, owing to the fact that there would be two different bodies of people looking at such questions from a different angle. Then, again, if it was claimed that osteopaths by manipulating the spine could prevent or greatly minimise the incidence of puerperal sepsis and eclampsia, it would be a wicked thing to deprive women of the opportunity of having their spine manipulated by osteopaths. That would mean that they would need to establish maternity and child welfare centres not merely for scientific medicine but also for osteopathy. The same would apply to the care of the health of school-children. If it was claimed, as it had been claimed, that the reduction of osteopathic lesions would prevent the incidence of infectious disease in the small child, clearly such children ought to have their spines examined and their osteopathic lesions rectified before going to school, or while at school, in order that the incidence of measles and other infectious diseases might be diminished.

If that was true, and the public desired to have safety in that way, there would have to be an alternative system of medical inspection and treatment provided by the State in every State department of medical activity. It seemed to him also that the local authorities would have to provide one or the other, even if they did not provide both, sets of medical officers of health. It might become a burning question at local municipal elections as to whether they should have disease prevented by the manipulation of the spine or by scientific medical methods.

OSTEOPATHIC THEORY: TRUE OR FALSE

Lord Esher: You said in your evidence that the osteopathic theory had been repudiated by the scientific world, but Dr. Macdonald said that he had made genuine efforts to get the scientific world to examine the theory. Is it the habit of the scientific world to repudiate evidence that it has not examined ?

The witness said he disputed Dr. Macdonald's statement, but he would rather leave that to the scientific witnesses. It seemed to him inconceivable that the anatomists and physiologists who have been working for 100 years investigating the structural and functional states of the body should have failed to observe the osteopathic lesion.

Lord Redesdale: Medical students are taught to keep an open mind ?—Yes.

Is it not the case that the medical profession are aware that to a certain extent they are still groping in the dark ? —Yes, in a great many instances.

You are not advancing the inconvenience to the State as an argument against the recognition of a new method for the prevention of disease?—Not if it has been scientifically proved.

CHAIRMAN: Might both theories be true—the medical and the osteopathic theory?—Oh, no.

If the one is true, the other is false?—Yes. I am dealing with the theory of osteopathy.

In certain cases you agree osteopathy does good work, but you take the view that it is limited?—Yes.

What kind of work do you confine it to?—The sphere of manipulative surgery, mainly dislocations or structural abnormalities of the joints.

The witness added that he had found that in most cases where osteopathic treatment was called for it was some trouble of the knee or elbow-joint, and those cases had occasionally been put right. There might be structural abnormalities of the joints of the spine in which manipulative surgery would be the right kind of treatment, but such were not within his own experience.

Protest from Chiropractors

Mr. ST. JOHN RAIKES, counsel for the British Chiropractors' Association, at this stage asked permission to make a statement regarding the evidence of Sir Farquhar Buzzard who quoted from an American book, the statement that chiropractic treatment was an old form of faith cure under a new name. As the chiropractors might be done harm in the eyes of the public by such statements, he wished to say that they took very strong exception to the statement. Chiropractics had nothing to do with faith curing whatever.

Dr. Mennell's Evidence

Dr. JAMES MENNELL, medical officer in charge of the physiotherapy department of St. Thomas's Hospital, London, then gave evidence for the B.M.A. Replying to Mr. Dickens, counsel for the Association, he said he started upon the system of joint manipulation in 1907, and since that time had been gradually elaborating many other manipulative methods of treatment. He had set out the results and the technique in several text-books, one of which, entitled "Backache," had been described to the Committee as an osteopathic text-book. In reviewing the immensely wide field covered by the practice of manipulation, he mentioned incidentally a kind of asthma in which there was reflex irritation of the nerves from spinal trouble, and which could definitely be relieved and even cured by manipulation. Manipulative methods, however, were not of any use in acute diseases, so far as he knew.

COUNSEL: Have you ever had a success which required the pre-supposition of anything like the osteopathic theory?—WITNESS: None.

Upon being reminded that Dr. Macdonald had said that his text-book was inspired by osteopathic teaching, the witness traced his introduction to manipulative treatment to the inspiration of one of the surgeons at St. Thomas's who took him over to Paris. He came home very much interested in work being done there, and he was given the opportunity to investigate at St. Thomas's Hospital, where he held an appointment for two years. Then he began to consider seriously specialising in physical medicine. As a result his first visit to the United States was made in 1919, 12 years after he had began to be interested in the subject. At that time he had never read an osteopathic paper or text-book, or seen any osteopathic work. Yet in 1919 he was invited to address on the subject of manipulation one of the most august medical bodies in the world—the Association of American Surgeons. With regard to text-books, Dr. Mennell admitted that he had read and very carefully studied one which was entitled "Osteopathic Mechanics." That dealt with the mechanical side with practically no theory at all. He had been practising joint manipulation, or manipulation of some sort, for 30 years, and probably he should have been a very easy convert to the osteopathy, but he found it easier to accept the orthodox explanation than the osteopathic explanation. They were asked to investigate and prove the osteopathic theory and the osteopathic treatment. He asked that those two things should be separated. To say that no one had investigated treatment was a little hard on one who had spent 30 years in endeavouring to do that very thing. As to the theory, so far as he could make it out, and as far as his reason would allow him to go, it seemed to him that it must be a creed, and as such it was incapable of scientific investigation. No one could believe it scientifically.

COUNSEL: Supposing the manipulative methods are confined to what you say are their legitimate objects—namely, local troubles—are they a danger unless the practitioner is very highly skilled?—WITNESS: Very great. There are physical dangers. The standard attained must be absolutely the highest.

Asked whether it was necessary for an osteopathic student to study all the subjects studied by a medical student, the witness said that any medical man who wished to practise any specialty had to take an elementary training in all branches of medicine and surgery. His own practice had been confined to physical medicine, but he was truly thankful that he had himself done so; he knew enough to tell his patient when to go to some other practitioner for help. A man who specialised ought to have adequate knowledge to know when he was himself ignorant.

Cross-examination of Dr. Mennell

Mr. THORPE, K.C., leading counsel for the promoters, asked the witness if he thought that qualified osteopaths performed useful service in this country? Dr. Mennell replied that they had helped many of their patients.

COUNSEL: How is it they do good? Is it by accident?—WITNESS: May we take some concrete case. Would you like the case of asthma? There are undoubtedly cases in which the qualified osteopath would bring health, comfort, relief, and possibly cure in suitable cases But if asked to deal with such a case I hope that I should investigate and find out whether it came under the heading of a suitable type for that treatment.

Does it come to this, that there are certain types of cases in which properly qualified osteopaths can bring benefit?—Yes.

And conversely there are certain cases which you could elaborate which they ought not to be allowed to deal with, such as pneumonia and so on?—Yes.

Later COUNSEL asked: What is the fundamental distinction between you and the osteopaths?—WITNESS: I cannot accept that the osteopathic spinal lesion is the most important single factor in the production of disease and the most important curative factor when the disease is attacked.

PASSAGES FROM A PRIVATE LETTER

COUNSEL: There was a time when you thought something of Dr. Andrew Still. Did not you refer to him, writing to one of his pupils, as your great master?—WITNESS: He was a very remarkable, inspiring teacher.

COUNSEL asked if the witness remembered saying: "In my own mind and in my own heart I pay loyal tribute to the great man who first conceived the possibility of applying manipulative treatment to the joints of the spine."

The witness replied in the negative, but when shown the signature of a letter to America dated August 6th, 1931, produced, he admitted that it was his own signature.

COUNSEL: Do I read this aright? You were referring to the orthodox medical people of this country and did you say this: "You mention one of my illustrations and add that this is the only place where apparent credit is carried to osteopathy. This is true, and I am sorry to say, deliberate, in spite of the fact that I know quite well of the truth of your statement that every figure and every page is a corroboration of the teaching of Dr. Andrew Taylor Still."—WITNESS: I did, but I believe there is *nothing in that to imply that I accepted the creed.*

COUNSEL: Having said that, you go on: "but you must remember that I was writing in the hopes that I might appeal to the medical men of this country and of the U.S.A. to whom the word 'osteopathy' or 'osteopathic manipulation' is anathema." Is that why you did not pay an open tribute to osteopathy—because it was anathema to medical men in this country?—WITNESS: No. We are against the eternal problem when you connect the manipulation with the creed.

COUNSEL: You go on "For them the very word must be dropped" (that is osteopathy) "and equally for them *the teaching of your great master (Dr. Andrew Still)* must be doled out in minute doses and in a disguised form, otherwise prejudice will be so great that again the progress we have already made will be set back for another generation." *What do you mean by that?—WITNESS: It is* the attachment of their treatment to their faith that has already thrown back the whole thing.

COUNSEL (reading): "In my own mind and in my own heart I pay loyal tribute to the great man who first conceived the possibility of applying manipulative treatment to the joints of the spine." Is that true?—WITNESS: Yes.

The witness added he was still willing to pay tribute to Dr. Still as a remarkable man, and a great teacher. Medicine was international in its character.

COUNSEL: You go on to say "I am wise to insist on what one may call the ABC of treatment first before making any attempt to enter into the wider realms."—WITNESS: I suppose I was referring to the wider realms of details.

COUNSEL: Are not the wider realms the theory of osteopathy? Details are not the wider realms?—WITNESS: I think so.

Proceeding, the witness protested that the letter was confidential. COUNSEL quoted further: "I hope that you will consider the views that I have expressed here as confidential, as were they broadcast I am afraid that my first effort to accustom my professional brethren to the idea that manipulative treatment has its useful place would be seriously handicapped."

COUNSEL: You found it difficult to get your brethren to accept manipulation?—WITNESS: In the early stages, but not now.

COUNSEL (again quoting): "So far the great point gained is that I have been able to produce an osteopathic text-book, however rudimentary, which has received appreciative notice in every medical journal."

That, COUNSEL suggested, was meant to bring into the heart of the osteopath to whom the witness had written that someone was blazing the lone trail in this unhappy country. He quoted further: "The attitude that I have always adopted is that orthodox medicine in which I was trained, has a useful and invaluable purpose to serve, but that the less orthodox methods have no less their own sphere of usefulness, and that until the two are combined they will neither of them rise to perfection, and that therefore neither of them will serve their fullest purpose."

The witness said that was his opinion and true belief, that when the osteopath is combined with the medical practitioner we should have a much more valuable article than either of them separately.

Further Questions to Dr. Mennell

Re-examined by Sir WM. JOWITT, counsel for the B.M.A., the witness said that so far as the theory of osteopathy was concerned he could not accept it. If the theory were right manipulative treatment would be the right method of dealing with all diseases, whereas in some diseases it would be extremely dangerous. No medical man was justified in prescribing a treatment unless he had good, solid scientific reasons for prescribing it. Manipulation came under that heading. His work had been to establish manipulative work on a solid foundation.

Lord ELIBANK *asked whether if osteopathic* manipulation was based on scientific thought and observation it was not entitled to the same recognition as the witness's manipulative treatment received. The witness replied: "Not while attached to a creed which is *not susceptible to scientific proof or disproof.*"

Before the courts adjourned the witness, addressing the Chairman, said he was frankly disturbed about the letter that had been read. It was undoubtedly written in entire confidence to a man who presumably had written to him in very friendly terms. He thought one was privileged in a private and confidential communication to speak with absolute freedom. The CHAIRMAN said he understood, and thanked Dr. Mennell for his assistance.

NOTES ON CURRENT TOPICS

Medical Qualifications in India

IN *the House of Commons on March 28th the* Government of India Bill was further considered in Committee. Mr. MOLSON moved an amendment to Clause 118 (Professional qualifications in general) with the object of preventing persons with European professional qualifications being disqualified from practising their professions in India. His amendment, he said, sought to do three things. In the first place it sought to restrict the protection to what he might call vested interests by defining more precisely those whom it was intended to protect. Secondly, the amendment extended protection to those who began to engage in a profession during the time that would elapse between the passing of this Bill and the passing of an Act of the Indian Legislature prescribing those qualifications. Thirdly, his amendment sought to make the previous sanction of the Governor necessary before any such new qualifications took effect. Nothing in this amendment was doing anything to force European professional men upon India; it did not endeavour to compel Indians to employ people with European qualifications, but only to prevent people with European qualifications from being disqualified from practising professionally in India.—Sir T. INSKIP (Attorney-General) said that the Government were prepared to accept the first two parts of the amendment, but not the third.

On Clause 119 (Medical qualifications) Sir T. INSKIP moved the first of a series of amendments to restrict the clause to British India, because he explained that the arrangements dealt with concerned only British India, and not the India including the States.—Sir F. FREMANTLE asked if there was no arrangement by which later on this might be extended to Federal India.—Sir S. HOARE replied that they must deal at present with British India. The whole basis of this clause was reciprocity between the medical councils of Great Britain and of India. There was no medical council for the Indian States. There was, however, no reason in the future why the Indian States should not accede to this part of the Act when they so wished, but for the moment they dealt only with the two medical councils.

Paying Patients in Voluntary Hospitals

In the House of Lords, on April 2nd, Lord LUKE moved the second reading of the Voluntary Hospitals (Paying Patients) Bill, which enables hospitals to provide accommodation for pay beds. Such beds, the noble lord said, were not to be provided at the expense of or by reduction in the number of ordinary beds. Patients in the pay-beds would be those whom a hospital almoner would not usually accept in the ordinary wards, but who could not afford the cost of private treatment in their homes and urgently required the assistance of a hospital with all its specialist treatment. Such patients were not the very poor, but the comparatively poor, who had sometimes been called "the black-coated poor." The provision of pay-beds in recent years had become recognised as a customary part of the function of voluntary hospitals. The *raison d'être* of the Bill was that some hospitals, in order to provide pay-beds, had recently obtained private Acts, and others wishing to do so must adopt the same procedure, which would cost at least £500. The present Bill would provide a uniform method of removing such anomalies, while safeguarding the interests of the sick poor. The Bill embodied the considered views of the King Edward Hospital Fund and the Hospitals Association.

Lord SANDERSON said that the Opposition had certain misgivings about the Bill. They were very anxious that it should not be the means of cutting down the services for poor people who could not afford to pay. They did not want the waiting lists in the hospitals to become longer or to run the risk of hospital treatment being cut short because of the pressure of the waiting list. The Opposition were very dissatisfied with the hospital system, or lack of system, and wanted to see all the hospitals taken over by the municipalities, publicly controlled, and kept open for free treatment for all who needed it. They should be supported out of the rates.

The Earl of DUDLEY, speaking as chairman of one of the large voluntary hospitals in London, supported the Bill. He said he hoped that it would not interfere with the powers of committees of management to charge varying fees in hospitals where they had the power to charge for in-patients. He had heard it said that it was the intention of the Charity Commissioners to issue an order limiting the amount to be charged to seven guineas. That would be a hardship on the lower-paying beds. In the hospital which he controlled they were able to charge as high as ten guineas for single rooms, but if they were to limit their charges to seven guineas they would have to raise the fees of the lower-charged beds, because the ten-guinea beds naturally covered to a large extent the charges made for the beds of lower cost.

Viscount HAILSHAM, Secretary of State for War, said that Lord Luke had made out a case for the desirability of having some beds available for that class of persons who were willing to make some payment towards the necessary expenses of receiving treatment, but were unable to pay the fees of a nursing home. The Government had considered the point made by Lord Sanderson, and had come to the conclusion that it was right to provide pay-bed accommodation, but that safeguards should be insisted on to ensure two things—first, that the property and funds of a hospital settled on it for the benefit of the sick poor were protected and prevented from being diverted for any other purpose; and secondly, that the accommodation which would otherwise be available in the hospital should not be restricted, and that there should be no risk of preventing poor people from having the amount of accommodation which would otherwise be available for them. While the Government would support the second reading of the Bill, they would feel it their duty to move amendments proposing specific safeguards with regard to the funds and property of the hospitals and dealing with other matters. He did not agree with Lord Sanderson's preference for a municipal rather than a voluntary system.

The Bill was read a second time.

Royal Assent

Among the measures which were given the Royal Assent by Commission in the House of Lords on Thursday, March 28th, were the following Acts: Ministry of Health Provisional Order Confirmation (County of Holland Joint Hospital District) Act, 1935; Ministry of Health Provisional Order Confirmation (Guisborough Joint Small-pox Hospital District) Act, 1935; Ministry of Health Provisional Order Confirmation (Huntingdonshire Joint Hospital District) Act, 1935; Ministry of Health Provisional Order Confirmation (South Chilterns Joint Small-pox Hospital District) Act, 1935.

HOUSE OF COMMONS

WEDNESDAY, MARCH 27TH

Medical Men and the Speed Limit

Mr. GLOSSOP asked the Home Secretary if he would instruct the police that doctors on their way to attend urgent cases were not to be prosecuted for exceeding the 30 miles per hour speed limit; and whether the same exemption would be granted to veterinary surgeons.—Sir J. GILMOUR replied: The question whether there should be an exemption from the speed limit in the case of vehicles used by members of the medical profession when attending urgent cases was discussed when the Road Traffic Act, 1934, was passing through Parliament, but it was decided that it would not be practicable to allow this exemption. It would be equally impracticable to place on the police the responsibility for assessing the degree of urgency when considering the question of instituting proceedings, and in my view the only satisfactory solution is to leave the matter to the courts.

THURSDAY, MARCH 28TH

Unemployment Assistance Expenditure

Mr. D. G. SOMERVILLE asked the Minister of Labour the present average weekly expenditure of the Unemployment Assistance Board; and by what amount, if any, this exceeded the anticipated average.—Mr. STANLEY replied: The present expenditure on unemployment assistance allowances is at the rate of about £44,000,000 a year. This accords substantially with the anticipated expenditure, as stated in the Financial Memorandum to the Unemployment Assistance (Temporary Provisions) Act.

Medical Rejections of Police Recruits

Sir WILLIAM JENKINS asked the Home Secretary (1) what was the percentage of men rejected on medical grounds who applied to join the police forces in England and Wales for the years 1932, 1933, and 1934; and (2) what number of applications was received to join the Metropolitan police force in 1933, 1934, and to the latest available date in 1935: what was the percentage of men rejected on medical grounds; and what percentage for causes other than medical.—Sir JOHN GILMOUR replied: The following statement gives the figures relating to the Metropolitan police. I regret that I have not got corresponding information for the county and borough forces.

—	1933.	1934.	Jan. 1st, 1935, to March 23rd, 1935.
Completed application forms received	8027	5893	1373
Rejected as below standard..	70 %	51 %	42 %
Attended for examination ..	1682	2415	724
Rejected on medical grounds	46 %	47 %	54 %
Rejected on other grounds ..	20 %	19 %	16 %

Milk and Infectious Disease

Sir ARNOLD WILSON asked the Minister of Health whether he would draw the attention of medical officers of health to the statement in the report of the cattle diseases committee that the available evidence as to the importance of milk in the spread of infectious disease was not conclusive, and that the number of cases of scarlet fever traced to milk in the last 20 years was only 2500 to 3000 out of some 2,000,000 cases.—Sir HILTON YOUNG replied: No, Sir. Even if it were established that only 2500 to 3000 cases of scarlet fever in the last 20 years were attributable to milk, I should still consider it important that milk should be pasteurised in order to prevent such cases in the future. But, in fact, the Committee on Cattle Diseases considered that infection through milk may be more extensive than appears at first sight, the reason being that it is only where a large number of cases occur that the milk-supply is likely to be suspected. Also, as my hon. friend is aware, scarlet fever is not the only milk-borne disease which can be prevented by pasteurisation.

Sir ARNOLD WILSON asked the Minister of Health whether he would draw the attention of medical officers of health to the statement, at page 28 of the report of the cattle diseases committee, that the most serious outbreak of disease brought to their notice, involving over 500 deaths, was traced to pasteurised milk infected by a human carrier.—Sir HILTON YOUNG replied : The outbreak in question occurred in Canada, and I understand that while it was not found possible to determine exactly how the milk became infected, the weight of evidence was to the effect that the infection was introduced before the milk reached the pasteurising depôt, and that much of the milk was distributed without having been submitted to the pasteurising process. I see no reason to call the special attention of medical officers of health to the matter.

Bookings at Maternity Hospitals

Mr. PARKINSON asked the Minister of Health whether, arising out of the Manchester case of Mollie Taylor, in which it was found that the porter of the hospital took all bookings for maternity cases and that these bookings bore no relation to the number of beds available, he would inquire in how many cases this practice of employing a porter obtained, and require that some qualified person, such as a lady almoner, should book the cases in relation to the number of beds available.—Sir HILTON YOUNG replied : Many maternity hospitals are outside my jurisdiction ; but I am advised that the method of booking referred to in the first part of the question is quite unusual. My medical officers inquire into the matter at the hospitals which they visit. As the hon. Member is no doubt aware, the published report on Mrs. Taylor's case contained a recommendation that the system of booking at the hospital concerned should be placed under the charge of a responsible officer.

Scarlet Fever at Denham and Iver

Sir FRANCIS FREMANTLE asked the Minister of Health whether he could make a further statement regarding the recent outbreaks of scarlet fever at Denham and Iver, Bucks, the number of cases and deaths involved, the origin of infection, and the administrative conclusions involved, with a view to the prevention of such outbreaks in future.—Sir HILTON YOUNG *replied* : Up to the present, 90 cases have been reported in which the signs and symptoms were sufficiently well defined to justify a diagnosis of scarlet fever, but there have been, in addition, a large number of mild cases in which the only clinical symptoms were sore-throat, vomiting, or slight fever. There have been two deaths. As regards the origin of the infection, I have nothing to add to the answer given on this subject on the 21st instant. The outbreak confirms the conclusion that it is practically impossible to avoid similar occurrences otherwise than by efficient pasteurisation, or some equally effective form of heat treatment, of the milk-supply.

Maternal Mortality

Captain ELLISTON asked the Minister of Health whether his attention had been drawn to the necessity of special local study of the causal factors of the continuing maternal mortality ; and what action he had taken or proposed to take in the matter.—Sir HILTON YOUNG replied : Yes, Sir. Such special study has been continuously in progress in the Ministry of Health. It was the main object of the special committee on maternal mortality appointed by one of my predecessors in 1928. I have myself recently carried the matter further as regards the local aspect by calling for special reports from the medical officers of health in the areas where the incidence is or has been most marked. I have further arranged for thorough local investigation of the problem in those areas and, for purposes of comparison, in other areas, by officers of the Ministry carefully selected for the purpose. I have secured the services of an eminent obstetrician to advise on the reports of those officers. Where immediate specific steps are recommended, I bring the matter to the notice of the authority for action accordingly. When all the reports are available I propose to consider the position as a whole and to lay a White Paper on the subject before the House.

Replying to Sir F. FREMANTLE, Sir HILTON YOUNG said he was afraid that he could not give a date when the White Paper might be expected, because it depended on the completion of intensive local investigations.

The Countess of IVEAGH : Has the right hon. gentleman taken into consideration the possibility of making compulsory a confidential notification of maternal deaths in all areas, as is now done in some areas ?

Sir HILTON YOUNG : Certainly that point has been under consideration, but at present the purpose is effectively served by the voluntary information which I get in response to my appeal to the local authorities.

Birmingham Infectious Diseases Hospital

Mr. GROVES asked the Minister of Health whether classified records had been kept regarding illnesses in nurses at the Birmingham City Infectious Diseases Hospital ; and, if so, for how many years were they available.—Sir HILTON YOUNG replied : According to information which I have received from the local authority, classified records of the illnesses of nurses in the Birmingham City Infectious Diseases Hospital are available for the years 1932 and 1933, and are set out in the Medical Officer of Health's Annual Reports for those years. Classified records for 1934 are not yet available.

MONDAY, APRIL 2ND

Royal Veterinary College

Sir ALAN MCLEAN asked the Minister of Agriculture whether the recommendations contained in paras. 44 and 45 of the Report of the departmental committee on the reconstruction of the Royal Veterinary College had been given effect to ; and if so, to what extent.—Mr. ELLIOT replied : The Governors have accepted in principle the recommendations to which my hon. and gallant friend refers, but action has been deferred until the rebuilding of the college is approaching completion. I understand that they have recently been advised that it will be necessary for them to apply for a new Charter, and that a draft is in course of preparation.

Private Maternity and Nursing-homes

Mr. EDWARD WILLIAMS asked the Minister of Health the number of private maternity and nursing-homes in the country, and the number that were registered and came under local government supervision.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied : The administration of the Nursing Homes Registration Act, 1927, is in the hands of the local supervising authorities established under the Act, usually the councils of counties and county boroughs, and the information desired by the hon. Member is not in the possession of my right hon. friend. He would, however, point out that under the Act all private maternity and nursing-homes, with certain specified exceptions, have to be registered by, and are subject to inspection by, the local authority.

Local Authorities' Maternity Hospitals

Mr. EDWARD WILLIAMS asked the Minister of Health the number of deaths to mothers and children, respectively, at maternity hospitals which were administered by local authorities.—Mr. SHAKESPEARE replied : According to the returns received from local authorities in England and Wales for 1933, the numbers of deaths during that year of mothers and children in their maternity hospitals and in the maternity wards of other hospitals and institutions administered by them were as follows : 607 maternal deaths and 2243 deaths of infants within 10 days of birth. Complete figures for 1934 are not yet available.

Nutritional Value of Milk

Mr. COVE asked the Minister of Health whether he was now in a position to give the House any information as to the proposed inquiry into the nutritional value of milk at certain schools and approved centres.—Mr. ELLIOT, Minister of Agriculture, replied : Yes, Sir. The Milk Marketing Board for England and Wales, and the Scottish Milk Marketing Board, have submitted to the Secretary of State for Scotland and myself particulars of certain arrangements for conducting an inquiry into the nutritional value of milk. These arrangements have now been approved for the purpose of Exchequer contributions under Section 11 of the Milk Act, 1934, and in accordance with the provisions of that section have been laid before Parliament and are now available to the House. The cheme is supplementary to the milk in schools scheme, nd it is hoped that the information which will be collected rill not only be of great value to those engaged upon utritional research, and in connection with public health nd education services, but will also have an important earing upon the problem of increasing the demands for iquid milk in this country. As will be seen from the articulars in the White Paper, the inquiry is under the upervision of a representative expert subcommittee of he advisory committee on Milk Publicity of the Milk larketing Board for England and Wales, and is being onducted by experienced medical officers working in onjunction with school medical officers and teachers. It s on a large scale, covering some 8000 children, and is xpected to last for some twelve months.

Sale of "Prepared Honey"

Sir JOSEPH LAMB asked the Minister of Health if his ttention had been drawn to the sale of large quantities of a substance described as prepared honey, which was not the pure product of the bee from the nectaries of flowers; and what steps he proposed to take to prevent this misrepresentation of the nature of food as offered and sold to the public.—Sir HILTON YOUNG replied: I am aware that a substance which is not pure honey is being sold under the name of "prepared honey." I have no power to take any action in the matter, but if the circumstance of the sale are such as to constitute an offence under the Food and Drugs (Adulteration) Act, the duty of enforcement rests on the local authorities, and it is open to any person to take proceedings.

Discharge of Mental Patients

Dr. O'DONOVAN asked the Minister of Health if representations had reached his department or the board of control that the requirements of Section 49 of the Lunacy Act, 1890, had been altered within the last 10 years to the detriment of the friends or relatives who desired to secure the discharge of a patient; that previous to that date the two doctors appointed to examine a patient paid one visit each and reported, but now they were required to go together on two visits, thus doubling the cost in fees; and in view of the fact that such an increased cost was prohibitive to the poor he would look into this and see if it was possible to return to the practice previously obtaining.—Sir HILTON YOUNG replied: The requirements of Section 49 of the Lunacy Act, 1890, have not been altered, but some years ago the Board of Control, after careful consideration, expressed the opinion that the section requires that the two medical practitioners should examine the patient together on two separate occasions. Since 1928 the Board have received two representations in the matter. The point has been noted for consideration in the event of amending legislation being introduced.

PANEL AND CONTRACT PRACTICE

Married Women in Industry

IN the *National Insurance Gazette* of March 21st "Secretary" points out that the problem of married women in insurance has not been solved by the recent reduction in their sickness and disablement benefit. Circular 329 IC., which started the controversy, made it clear that married women's claims were more than double actuarial expectation. Lax certification by doctors was partly blamed for this, and eventually the rates of benefit were reduced by an amending Act of Parliament. Now, apparently, claims by men under the Act are less than was expected, whilst claims by women are equal to or more than expectation. The percentage of women claimants (being spinsters and widows) is only slightly higher than that of men, whereas the percentage of married women claimants is three or four times that of men and other women. The expectation of sickness is recognised to be higher for married women than for other insured persons, but it is thought still to be too high. Married women become insured in two ways: (1) as new entrants; (2) continuing insurable employment after marriage. As it has been suggested that many of both classes work only a few hours a week, and that insurance is therefore more profitable than employment, a study was made of 262 applications as new entrants when it was found that:—

6 per cent.	were employed about	1 hour	per day or less.
8 ,, ,,		2 hours	
12 ,, ,,		3 ,,	
20 ,, ,,		4 ,,	
29 ,, ,,		5 ,,	

These figures (which do not relate to Class 2) show that one in every three or four employed married women is engaged in what is virtually a spare-time employment, the remuneration for which may be little more and is sometimes less than sickness benefit. "Secretary" says that it is to a certain extent competent for societies to refuse admission to married women who are employed for less than a minimum number of hours. Many societies do not admit married women at all. This protects the society as far as new entrants are concerned, but not with regard to these continuing insurance after marriage. "Secretary" would like to find some method of weeding out those who are really whole-time housewives with some subsidiary work in insurable occupations; in the certification of such cases the doctor should, he thinks, take into consideration the hours of work at their employment. "Secretary" does not mention, as he might have done, that healthy married women who go out charing often evade insurance altogether. If their employers connive at this infringement of regulations and are not found out, the contribution for these healthy women are not forthcoming to help to pay benefit for the less robust chars, who immediately insist on being insured because they so frequently need it. This goes to swell the percentage of married women's claims.

Drugs and Appliances

Section 10 (2) of the National Health Insurance Act, 1924, provides that "medical treatment and attendance" includes the provision of proper and sufficient medicines, including such chemical reagents as may be prescribed, and of the prescribed medical and surgical appliances. Probably no aspect of the Act has caused more misunderstanding than the question what may or may not be prescribed as part of medical benefit. It is sometimes suggested that insurance practitioners are not permitted freely to order medicines which are not included in the National Formulary, but reference to the introduction to the volume itself will reassure the doubter that the Formulary in no way affects the right of a medical practitioner to order such proper and sufficient medicines for his patients as the terms of his agreement with the insurance committee require. Any practitioner may write extemporaneous prescriptions independently of the Formulary or of the Drug Tariff, although he should bear in mind that the chemists' fund is limited, and therefore combine efficiency and economy. Insurance practitioners are advised not to order proprietary preparations unless they have satisfied themselves that the therapeutic effect aimed at cannot be obtained by the use of non-proprietary remedies. A list of what are regarded as efficient substitutes for a number of proprietary preparations is incorporated in the National Formulary, and a practitioner who has prescribed a proprietary preparation for which a recognised substitute of lower cost is available, and who has failed to give such substitute a trial, may find difficulty, when challenged, in justifying his action.

The London insurance committee, on March 28th, considered a report by their medical benefit subcommittee giving instances of expensive drugs and appliances recently prescribed—quite properly—for insured persons. Scrutiny of the prescriptions received from chemists had satisfied the subcommittee that practitioners are not unmindful of their duty to prescribe proper and sufficient medicines for insured persons. Inquiries have often to be addressed to manufacturers asking for prices and particulars of new remedies prescribed for insured persons, the introduction of which is so recent that they have not yet been included in the makers' latest lists.

Fees Charged to Insured Persons

During a period of two months thirteen applications were made to the medical benefit subcommittee in a large urban area for the withdrawal of accounts rendered by practitioners or the refund of fees, paid in respect of medical treatment provided for insured persons. Action was taken as follows:—

In one case the account was cancelled as the insured person's name was included in the practitioner's list, and the account had been rendered in error.

In two cases the amounts were refunded as the insured persons were entitled to receive treatment as insured persons.

In three cases no action was taken, as the insured persons' names appeared in the lists of neighbouring practitioners, and the necessary transfers had not taken place.

In three cases no action was taken as application was not made within the specified time—viz., one month from the date of the presentation by the practitioners of the accounts, and in two of the cases treatment was provided in a private capacity.

In one case the account was withdrawn, the practitioner providing treatment as deputy for a neighbouring practitioner.

In the remaining three cases no action was taken as treatment was provided in a private capacity.

PUBLIC HEALTH

Flat-foot in School-children

NOT long ago Mr. Blundell Bankart pointed out to the Medical Society of London that a flat-foot is not in itself a deformity, nor a malady, nor indeed any disability whatever; it is the natural attitude of the foot in relaxation. The arched condition of the sole of the foot is an attitude or posture determined by muscular action, and maintained only so long as the muscles are in action. The so-called arch of the foot—which anatomists for centuries have taught is the normal condition, and which orthopædic surgeons have been at such pains to preserve—is a contracture deformity almost universally acquired as the result of cramping the foot in a shoe. If this is so, the wearing of sandals and plimsolls should preserve the natural mobility of the child's foot by permitting it to flatten when the weight of the body is on it.

Officers of the school medical service should have the best chance of verifying this. Recently a number of assistant medical officers in Kent were asked to report on the relation of flat-foot to the wearing of what are now called plimsolls. Do these heelless rubber shoes cause any pathological condition of flat-foot? Dr. C. Campbell agrees with Mr. Bankart that the arch of the foot is maintained not by ligaments but by muscles; a pathological condition exists only when the muscles become so fatigued that postural reflex activity is exhausted. He divides the flat-foot of school life into two types—(1) supple, where loss of function is negligible; (2) rigid, with considerable loss of function; but he does not give the proportion of his types. In a school where plimsolls are worn he found flat-foot (undefined) to be slightly commoner than in other schools where they are not worn, but he regards them as harmless to normal feet if the children are not required to stand in them for long periods at a time. Where however there is any predisposition, e.g., weak ankles, poor muscular tone, bad posture in standing and walking, wearing plimsolls will accelerate the development of flat-foot. Dr. W. Lessey and Dr. J. Selfe can find no evidence that the wearing of plimsolls is a cause of flat-foot, but Dr. Gladys Stableforth gives tables which suggest that the proportion of flat-footed children is much higher in schools where plimsolls or sandals are worn; it was 25 per cent. in one school where plimsolls were worn all day. Obviously the wearing of plimsolls makes it easier to spot the feet which lose their arch when the weight of the body is on them, but Dr. Stableforth had other criteria than this. But neither in her figures nor in Dr. Campbell's is there any exact evidence that they were dealing with a pathological condition. On the other hand, most boots and shoes restrict the movement of the feet, and the resulting loss of suppleness must tend to the acquirement of the real disability of foot strain.

But however unconvincing may be the evidence of disability due to the wearing of such simple footgear, flat-foot is not uncommon in schools, and the suggestions for treatment made in this combined report have their value. Dr. Campbell remarks that many cases occur during adolescence, the majority of which could have been prevented by measures taken at school to correct faulty habits and develop weak muscles. Dr. Stableforth blames a faulty stance. Few children, she says, know the correct way of walking or standing; many of them turn the toes out and allow the weight to fall on the inner border of the foot, putting an enormous strain on the arch. Walking, as distinct from marching, is not, it seems, included in the curriculum for gymnastic instruction. But it is encouraging to see that the foot is receiving increased attention from physical training instructors in coöperation with the medical officers and at the remedial exercise clinics under the guidance of orthopædic surgeons.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 23RD, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2708; diphtheria, 1517; enteric fever, 22; acute pneumonia (primary or influenzal), 1690; puerperal fever, 56; puerperal pyrexia, 157; cerebro-spinal fever, 22; acute poliomyelitis, 3; encephalitis lethargica, 4; dysentery, 13; ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 30th was 3863, which included: Scarlet fever, 1120; diphtheria, 1717; measles, 11; whooping-cough, 312; puerperal fever, 26 mothers (plus 10 babies); encephalitis lethargica, 269; poliomyelitis, 1. At St. Margaret's Hospital there were 22 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 20 (1) from measles, 4 (1) from scarlet fever,

(*Continued at foot of opposite page*)

CORRESPONDENCE

MYASTHENIA GRAVIS

To the Editor of THE LANCET

SIR,—I have been engaged during the past month in investigating the feasibility of the oral administration of Prostigmin for the treatment of myasthenia gravis over long periods. I was therefore much interested to read Dr. Denny-Brown's letter in your last issue. The result which he obtained in his patient by giving orally tinct. belladonnæ ♏ xx. followed by physostigmine salicylate gr. 1/6 was most encouraging. The action was comparable in degree and duration to that of a hypodermic injection of prostigmin (2 mg.). No unpleasant effects were noticed apart from some weakness of the pulse and general faintness during the first two hours.

I have had an opportunity of testing this method on three cases of myasthenia whose reactions to prostigmin by injection have been repeatedly investigated by myself and found to be very nearly constant. The result which I obtained with the oral administration of physostigmine has been so different from the one described by Dr. Denny-Brown that it is obvious that individual patients may show marked tolerance or, on the other hand, great susceptibility when this drug is exhibited. I feel that my results might be helpful to any of your readers who are at present engaged in the treatment of cases of myasthenia.

CASE 1.—Tinct. belladonnæ ♏ xv. in water, followed fiteen minutes later by physostigmine salicylate gr. 1/10. Half an hour later the patient showed some improvement and about the same time complained of eructations and epigastric discomfort. The improvement lasted about an hour. The same patient, after an injection of prostigmin 0·5 mg., experiences a greater improvement lasting two and a half hours. No discomfort is felt although no atropine is given.

CASE 2.—This case also responds favourably to prostigmin 0·5 mg., without atropine. Very limited ocular movements are restored to a full range. The grasp increases from 2 lb. to 14 or 15 lb. She received tinct. belladonnæ ♏ xx. followed in fifteen minutes by physostigmine salicyate gr. 1/8. No improvement occurred. On the other hand she complained of epigastric pain, a feeling of coldness, and she vomited an hour and a half after taking the drug.

CASE 3.—After an injection of prostigmin 0·5 mg., this case shows a diminution of ptosis, and an improvement in the grasp from 5 lb. to 18–20 lb. The effect lasts about two hours. She was given tinct. belladonnæ ♏ xx., followed in fifteen minutes by physostigmine salicylate gr. 1/8. No subjective or objective improvement was noticed. She was cold and shivery for about two hours, she complained of epigastric pain and nausea, and at one time members of the nursing staff were alarmed at her condition as her pulse was barely palpable.

In view of my experience I feel that caution is necessary when using physostigmine, especially as the cases recorded here received smaller doses than the ones used by Dr. Denny-Brown, and showed signs of intolerance to such an extent that the desired improvement was not obtainable.

I am, Sir, yours faithfully,
L. P. E. LAURENT.
University College Hospital, W.C., April 1st.

To the Editor of THE LANCET

SIR,—It does not detract from the importance of Dr. M. Walker's discovery of Prostigmin in the treatment of myasthenia gravis to recall that American observers have for some years reported equally good results by amino-acid therapy. To take one example from the numerous reports in the American literature, Boothby (Jour. Amer. Med. Assoc., 1934, xxi., 1599) says :—

> "In a series of 46 cases of myasthenia gravis treated with glycine and usually also with ephedrine, all but two responded favourably ; 13 patients are walking, 8 greatly benefited and doing light work, 15 are moderately improved, and 3 have just started treatment."

On theoretical grounds there might be some justification for combining prostigmin and glycine therapy, since the glycine might, by providing the creatine necessary for muscular contraction, avoid the danger of "flogging a tired horse" to which Dr. Denny-Brown refers in his letter in your last issue.

I am, Sir, yours faithfully,
DOUGLAS HUBBLE.
Derby, April 1st.

PROGNOSIS IN PULMONARY TUBERCULOSIS

To the Editor of THE LANCET

SIR,—In Dr. Vere Pearson's article on Prognosis in Pulmonary Tuberculosis (March 23rd) I was pleased to observe the following passage: "The calling of which the patient has experience is generally the easiest and most lucrative and should not be lightly abandoned." It is surprising how frequently one encounters tuberculous patients who have been advised to give up a quiet sedentary occupation with a living wage in exchange for "an open-air job" (no practical details suggested). Too often the town-dweller visualises country life as an idyllic existence "midst sun-kissed cornfields and pleasant orchards." A slushy farmyard at 5 A.M. in February is a different picture—but must needs be faced. Farming to-day often offers but a lean livelihood to the experienced man born and bred in the country; what are the prospects for a weakly tuberculous ex-clerk with a wife and family to support ?

I am, Sir, yours faithfully,
T. WARWICK PRESTON.
Queen Anne-street, W., March 27th.

THE PSYCHONEUROSES

To the Editor of THE LANCET

SIR,—I must agree with your leading article that the study demanded for the diploma of psychological medicine, and even for the doctorate in psychological medicine, is of little value in the actual conduct of analytical therapy. The knowledge demanded for the diploma is related to psychotherapy in much the same way as anatomy is related to surgery, and to

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(*Continued from previous page*)

30 (5) from whooping-cough, 61 (6) from diphtheria, 49 (8) from diarrhœa and enteritis under two years, and 175 (24) from influenza. The figures in parentheses are those for London itself.

There has been a further substantial rise in the number of deaths attributed to influenza, the deaths for the last few weeks (working backwards) being 175, 145, 139, 83, 91, 83, 91, 71, 56. This week these deaths were distributed over 65 great towns, Liverpool reporting 19, Stoke-on-Trent 14, Manchester 11, Warrington, Birmingham, Cheltenham, and Cardiff each 4, West Ham, Willesden, Darlington, Rochdale, St. Helens, Sunderland, Derby, and Swansea each 3. Five fatal cases of diphtheria were reported from Birmingham, 4 from Portsmouth, 3 each from Liverpool, Manchester, Sunderland, and Merthyr Tydfil. Hull reported 5 deaths from measles, Wigan 2. The 2 deaths from enteric fever occurred at Hull and Liverpool.

The number of stillbirths notified during the week was 309 (corresponding to a rate of 45 per 1000 total births), including 41 in London.

hold the diploma is no more proof that the diplomate is capable of performing analytical therapy than the possession of skill in anatomy is an indication of capability of performing a surgical operation. The only way in which one can acquire psychotherapeutic skill is either by wide clinical experience working under the guidance of one who has mastered this work or by undergoing a personal analysis.

Your attitude regarding the knowledge of organic neurology appears to me to be indefensible. Surely a sound knowledge of organic neurology is essential unless the psychotherapist is to be a mere ancillary to the neurologist. It opens the whole question of lay analysis which is not desirable as a general rule. It is, however, just as important that the neurologist should have sufficient knowledge of the psychoneuroses. A short time ago I was surprised to hear an eminent neurologist label an obvious anxiety neurotic as a "congenital psychasthenic" for whom nothing could be done except the provision of the traditional bottle of bromide.

It seems a pity that it is not possible to provide an additional diploma to the two already bestowed by London University. The present two varieties are for special knowledge in psychiatry and for special knowledge in mental deficiency. The third type would be for special knowledge in psychotherapy, and those wishing to acquire this diploma would have to give evidence of really having performed analyses and undergone *training in analytical technique.*

It appears to me that Dr. Henry Wilson is correct in deploring the fact that medical superintendents of mental hospitals have been given control of clinics for psychotherapy. The work of the mental hospital medical officer is mainly administrative and most mental hospital medical officers know little of the technique of psychotherapeutic work. His suggestion of the establishment of part-time posts is in my opinion an excellent one.

I am, Sir, yours faithfully,

March 30th. CLIFFORD ALLEN.

DETECTION OF LEAD POISONING

To the Editor of THE LANCET

SIR,—I have read with interest your leading article on the Detection of Lead Poisoning in THE LANCET of March 2nd. "A Thirty-Minute Spectrographic Micro-Method for the Detection of Pathological Lead in Peripheral Blood," on which you comment, was developed by Scott and myself for its practical value in expediting the diagnosis of lead poisoning rather than for purely scientific value. There are certain statements in your comment which convince me that we failed to make ourselves clear in our article. You say, "The authors claim that a positive result 'indicates lead poisoning, or an early stage of convalescence from it'; but consideration of the results obtained by R. A. Kehoe et al. throws some doubt on the justification for this conclusion." With reference to the level of lead in the blood of a group of medical students, which corresponded to 0·06 mg. per 100 c.cm. of blood, it is further stated, "This amount is equivalent to 0·06 γ in 0·1 c.cm., and it is noteworthy that its presence would give a positive result in the test for lead encephalopathy devised by Blumberg and Scott."

A "positive result," in the sense in which we used the term, is not the detection of lead, but the detection of pathological lead, and is defined as the result in which "the sensitive lead line at 2833·07 Angstrom units would appear visible to the eye, and the minor lines at 2802·09 A.U. and 2614·20 A.U. could be seen with the aid of a lens." Thus, 0·05 mg. per 100 c.cm. could be detected, but the truly pathological range does not begin until the concentration reaches 0·2 mg. per 100 c.cm. This means, of course, that 0·06 mg. per 100 c.cm. could be *detected*, but would be a non-pathological trace and considered a negative rather than a positive result. Dr. Scott and I have reported, of course, on the occurrence of non-pathological traces of lead in normal blood, and well recognise that the detection of such a trace does not indicate lead poisoning. Our findings in regard to the level of lead in the blood and the appearance of lead poisoning were reported on May 1st, 1934, and have appeared in a preliminary note (Amer. Jour. Dis. Child., 1934, xlviii., 1437). We have *just submitted a detailed* report for publication, in which the following values have been established from our data:—

Non-pathological	0·005–0·1 mg.	per 100 c.cm.
Pathological borderline.. ..	0·1 –0·2 ,,	
Pathological (lead poisoning or convalescence)	0·2 –1·0 ,,	

Our results show that there is no more lead in the blood of normal adults than of the children studied. So far as our own results are concerned, the values in children tend to exceed slightly those in adults, presumably due to pica or a previous epidemic of storage battery lead poisoning in Baltimore, but many of the patients seen in Dr. Park's clinic at the *Harriet Lane Home are of the poor negro class* and may not give representative results.

I am, Sir, yours faithfully,

HAROLD BLUMBERG,

Department of Biochemistry, The Johns Hopkins University, Baltimore.

March 18th.

THE ROYAL VICTORIAN ORDER.—The following promotions and appointments have been made in the Royal Victorian Order, on the occasion of the visit of the Duke of Gloucester to Australia and New Zealand. To be Members of the Fourth Class: Surgeon Commander Alexander William Gunn, M.B., R.N.; Surgeon Lieut.-Commander Lionel Lockwood, M.D., R.A.N.

SEAMEN'S HOSPITAL SOCIETY.—The annual court of governors of this society was held on March 28th at the Mayfair Hotel, with Lord Howe in the chair.

The annual report was presented by Sir Ion Hamilton Benn, who said that the income from patients' payments had gone up, while subscriptions from the public remained about the same and the income from legacies had gone down. The balance sheet showed on the year's working a deficit of £633. There was an increase in expenditure. Some of the branches, had, however, made a good showing, notably Tilbury Hospital, which during the year had reduced the deficit on its working by £1000, and the Hospital for Tropical Diseases, which had been able, mainly through increased receipts on account of services to patients, to convert a deficit of £1500 into a credit balance of some £300. The board of management had made a change for their nursing staff from an affiliated training school to a self-contained training school, which meant that the nurses would receive a more compact training in a shorter time. They were also still hopeful that it might be possible to enlist the assistance of the shipping companies to make the post-graduate courses for ship surgeons an integral part of the curriculum of the Mercantile Marine. In proposing the adoption of the report, Lord Howe made an appeal for £40,000 to build a new hospital with a nurses' home, at the Albert Dock. The Port of London Authority had presented the society with a site and the sum of £25,000. Capt. Euan Wallace seconded the proposal and the report was adopted by the meeting. Vice-Admiral R. M. Colvin and Sir Charles McLeod were elected to the board of management.

OBITUARY

SIR EDWARD SHARPEY-SCHAFER, F.R.C.P. Edin., F.R.S.

EMERITUS PROFESSOR OF PHYSIOLOGY, UNIVERSITY OF EDINBURGH

WITH the death of Sir Edward Sharpey-Schafer, which occurred at his house in North Berwick on Friday, March 29th, a great figure is lost to scientific medicine. He earned prominence by work in histology performed more than half a century ago, and from that time throughout his long career he remained in the van of physiological research, making fundamental additions to scientific knowledge.

[Photograph by Elliott and Fry

SIR E. SHARPEY-SCHAFER

Edward Albert Schafer (known to all the present generation as Sharpey-Schafer) was born in London in 1850, the son of Mr. J. W. Schafer, of Highgate, who had also German connexions. He was educated at Clewer, Windsor, before entering University College, London, where he joined the medical school attached to University College Hospital. He was a pupil of William Sharpey during the last years of that great man's occupancy of the chair of physiology and anatomy at the College. When a studentship at the College was founded in Sharpey's honour, Schafer became in 1872 the first Sharpey scholar, while he was already marked out as showing exceptional promise by the awards of scholarships at London University in zoology, anatomy, and physiology. In 1874, having qualified as M.R.C.S., he became assistant professor of physiology at the College, where Burdon-Sanderson succeeding Sharpey occupied the new Jodrell chair—the first separate chair in physiology to be established in England. Michael Foster was the chief demonstrator. Schafer's earlier work was almost entirely histological, and his publications on the structure of striped muscle-fibres became classical. His first paper dealt with the coagulation temperatures of the blood proteins and he followed this with classical studies on the histology of fat absorption. His position was soon established as a leader of his science; he was one of the founders of the Physiological Society in 1876, and was elected F.R.S. in 1878, an unusually young recipient of the distinction. In 1883 he was elected Jodrell professor, a post which he was to hold for the next 16 years. During this period his contributions to medical science were of the first importance. In 1885 he wrote his well-known text-book, "The Essentials of Histology," which has passed through 13 editions, the latest appearing only last year. The book was a practical expression of words in his introductory address to the students of the medical school in that year, when he regretted the general assumption of those in charge of medical education at the time that anatomy was the foundation on which the whole superstructure of medical and surgical science could be reared. He pointed out that the assumption could only be justified if "the object of medical education were to provide physicians not for the living but for the dead," and his text-book had for its object the supplying to students of the many data necessary for the comprehension of physiological processes. The book in its various editions has endured much revision and has been of the highest practical value to many generations of students. Schafer had already proved the logical necessity of the microscopic study in association with systematic anatomy in the eighth edition of Jones Quain's Anatomy, of which he was a co-editor, and in which the histology of the various structures and organs was displayed.

Schafer now took up work on cortical localisation and on the rhythm of muscular response, publishing his results in 1887 and 1889, while in 1891 appeared researches on ciliary and amœboid structure, followed by those on the structure of the fovea. In work on the heart he was among the first, if not the first, to use methods of photographic record. His invention of the plethysmograph was followed by well-known studies on the contractions of the spleen. In collaboration with George Oliver, he published researches showing the effects produced by the intravenous injection of extracts made from the chromaphil tissue contained in the medulla of the adrenal body, these being pioneer investigations into the activities of the animal extracts. The authors showed that extracts of the suprarenals and the pituitary contained substances which raised the blood pressure, and they must be regarded as the initiators of much of the endocrinology that has followed.

In 1898 he undertook the editorship of the text-book of physiology by British authors, an undertaking which achieved a success quite unusual where the work of many authorities is recorded in collaboration; it became immediately a standard book of reference on physiology throughout the world. This was not surprising considering the band of contributors he was able to secure, among whom were Gowland Hopkins, E. H. Starling, Benjamin Moore, and W. D. Halliburton. Schafer wrote on metabolism and the internal secretions, and supplied an inclusive summary of the enormous subjects. Each of the articles was a complete monograph written out of particular knowledge. To physiologist, pathologist, and physician alike in search of minute fact to support any given theory or opinion the book became an invaluable work of reference.

The second volume of this text-book appeared just after Schafer had accepted, in 1899, the chair of physiology at the University of Edinburgh, and here he returned to work on the tracts of the spinal cord which had held his particular attention some 10 years previously. Afterwards he investigated the intracellular blood canaliculi of liver cells, and published researches on pulmonary blood pressure, on the effects of vagotomy, and on the return of sensory functions in the skin after denervation. Some of his results were verified by experimentation on his own person, the last of them being performed only 10 years ago when he was already an old man. While at Edinburgh, also, he devised his method for the performance of artificial respiration on the apparently drowned, a piece of practical work for the performance of which he is widely known to the public, and which gained for him the distinguished service medal of the Royal Life Saving Society.

In 1913, the year when he was knighted, Schafer delivered the Lane lectures at Stanford University, California. These were published first in abbreviated form without illustration, but a revised issue which followed, was greatly enhanced in value by the profuse addition of tracings and photographs. The lectures, when published under the title of "The Endocrine Organs," formed a luminous and concise account of the state of knowledge at that date concerning the highly important glands, and the book was re-published in two volumes in 1924 and 1926. It is unnecessary to point out the authoritative nature of a work which is so constantly quoted, and apart from the voluminous and concise nature of its information the critical faculty exercised by the author—his method of dealing with controversial questions—is particularly to be commended. He founded also the *Quarterly Journal of Experimental Physiology* and continued to edit it until his retirement from the chair at Edinburgh, in 1933, when the editorship passed to Prof. I. de B. Daly. On his retirement his assistants published a special volume of this journal in his honour, which the recipient edited himself, while its contents were entirely composed of original researches by the collaborators.

The appointments held by Sir Edward Sharpey-Schafer (the addition to his surname was made in 1918) were numerous and important, and his name must have been known to the public more widely than that of any other physiologist. He was general secretary to the British Association for the Advancement of Science for 5 years from 1895–1900, and president of that body in 1912. For 47 years a fellow of the Royal Society, he received a Royal medal in 1902 and the Copley medal in 1924. He was a medallist of the Royal Society of Edinburgh and was awarded the de Cyon prize of the Academy of Sciences of Bologna. In 1923 he was president of the International Physiological Congress. He was an honorary fellow, associate, or corresponding member of numerous continental and American bodies. The Royal College of Physicians of London gave him the Baly medal, and the sister college of Edinburgh made him an honorary fellow. He received doctorates in medicine, science, or laws from exactly a dozen universities, British, continental, and American, and all who knew the strenuous and valuable nature of the researches thus recognised found that the honours were the due reward of merit. He lived for physiology, and the abiding inspiration of his career was summed up by himself when addressing in Edinburgh an Inter-State Post-Graduate Assembly of North America a few years ago. Speaking of the relationship of physiology to medicine he said that no line of demarcation could be drawn between any of the branches of science associated with medicine. "In one direction physiology borders on pathology, in another on pharmacology, in another on chemistry, in another on physics, in another on general biology both of animals and plants." No one has ever more clearly shown that a branch of science, whatever it may be, cannot be dealt with unless its relationship to other branches is taken into account. To prove the application of this axiom to the relationship between physiology and medicine was his life's work.

Sir Edward Sharpey-Schafer was married twice, first in 1878 to Maude, daughter of Mr. A. W. Dixie, and secondly in 1900 to Ethel, daughter of Mr. J. H. Roberts, F.R.C.S. His widow and a daughter survive, but he endured the tragedy of losing both his sons in the war.

We have received the following tribute from Dr. W. A. Bain, lecturer in physiology at the School of Medicine, Leeds: "As the last of Schafer's pupils to devote himself to full-time teaching and research in physiology, and the last also to have actually worked with him, may I be permitted to pay tribute, however inadequately, to his memory? To most Sharpey-Schafer is known only by his writings; to some thousands he was known as a teacher; to some hundreds as a fellow physiologist; and to a few as a chief and a friend. Of all who came into more or less personal contact with him, the most highly privileged were those who had the honour of working with him or under him, for they could fully appreciate the true greatness of the man.

"Schafer was fortunate in the influences which played on and superimposed themselves on his own brilliant natural gifts, and in him could be plainly discerned the chief characteristics of three of the greatest figures in 19th century physiology; Sharpey, the histologist; Ludwig, the experimentalist, whose very appearance Schafer seemed to acquire; and Michael Foster, the teacher. His first paper was on a histological subject and, as he delighted to recall, was rejected by the Royal Society only to be hurriedly published some time later after a similar paper by the Hertwigs had appeared in a Continental journal and been loudly acclaimed. Schafer's interest in histology was always maintained. He held very strongly to the view that histology should be an integral part of the physiological curriculum, and he never tired of deploring the modern tendency to separate the two subjects and relegate the teaching of histology to the anatomists and the anatomical laboratory. As an experimentalist, even in his latter years, he combined a splendid technical ability with a flair for getting at the essentials of a problem and an almost uncanny genius for assessing the significance of a result. This last faculty was a remarkable thing—incomprehensible in its operation, but generally justified in its results. It sometimes led him to make prophetic utterances, the wisdom of which was demonstrated years later in the natural march of science.

"Schafer's classroom was one of the greatest tributes to the power of his personality. Edinburgh classrooms were never noted for the good order observed in them, and few things could be more dramatic than the sudden transition from the babble of 200 voices to a stillness as of the grave when Schafer appeared at the door of his theatre and made his way slowly, and with characteristic step, to the rostrum. Many a time the one o'clock gun went off as Schafer was talking. In probably any other lecture theatre in the university that would have been the signal for pandemonium, but Schafer was permitted to go on. The admiration of the student for Schafer was mixed with fear, but to those who knew him he was, under the somewhat stern exterior, the kindliest and friendliest of men, with a keen sense of humour and a very charming smile. His memory was marvellous, and many a time his colleagues and pupils have been enthralled as he recounted incidents and anecdotes of many years ago as though they were of yesterday—and there was an incident or an anecdote a propos of almost anything, such was the length and breadth of his experience. And what a joy it was to hear him talk. He had a mastery of the English language, and the beauty and precision of his diction must have been a revelation to everyone who heard him. Though we shall see and hear him no more, his influence and example will live on, and will continue to be for many of us the principal inspiration of our lives."

THOMAS JEFFERSON FAULDER, M.B., B.Chir. Camb., F.R.C.S. Eng.

THE death occurred on March 20th of Mr. Jefferson Faulder, senior surgeon to the Throat Hospital, Golden-square. He was a distinguished classical scholar as well as an accomplished laryngologist.

Thomas Jefferson Faulder was born at Carlisle in 1871 and received his education at St. Bees School, whence he proceeded to Clare College, Cambridge, in 1889 as senior classical scholar. He obtained a first class in the classical tripos in 1893, and deciding to follow medicine joined the medical school at St. Bartholomew's Hospital, obtaining the Jeaffreson exhibition in 1898, and scholarships with regularity for the next two years, culminating with the Brackenbury scholarship in 1903. In this year he obtained the English double diploma, and in 1904 proceeded to the F.R.C.S. Eng.; in 1905 he graduated as M.B., B.Chir. Cambridge. At St. Bartholomew's Hospital he was house surgeon to the late Harrison Cripps, and for three years acted as junior demonstrator of anatomy. In 1907 he became chief assistant in the throat department of the hospital, a post which he held for six years, during which time he made sound clinical contributions on various aspects of his specialty to *St. Bartholomew's Hospital Journal* and also to the *British Medical Journal*. While engaged in the laryngological work at St. Bartholomew's he was elected to the staff of the Golden-square Hospital and also was appointed surgeon to St. Marylebone General Dispensary, and when the war broke out he was leading a very full professional life. During the war he served with the 92nd Brigade, R.F.A., and received the Territorial Decoration; he later recorded in the *British Medical Journal* some interesting reflections on the relationship between military and occupational diseases. After the war he resumed his duties at his hospitals and practised successfully his specialty of laryngology.

Mr Jefferson Faulder married a daughter of his chief, Mr. Harrison Cripps.

SIR HORACE PINCHING, K.C.M.G., M.R.C.S.

LATE DIRECTOR-GENERAL, PUBLIC HEALTH DEPARTMENT, CAIRO

THE death occurred on March 28th of Sir Horace Pinching at Cairo, where he had for many years resided and where as a distinguished public servant he was well known.

Horace Henderson Pinching was the son of Mr. G. J. Pinching, J.P., of Gravesend, Essex, and was educated at Epsom College and Pembroke College, Oxford. He graduated in arts at Oxford and came for his medical training to St. George's Hospital, took the English double qualification in 1883, and entered immediately the R.A.M.C. He was seconded for service in the Egyptian army in 1888, and six years later was transferred to the public health department of Egypt. He found there much to do, for the public health of Egypt was deplorable, while all efforts at reform met with serious resistance. Cholera constantly made its appearance, and the population was gravely affected also by parasitic diseases and infectious ophthalmia. In carrying into effect measures of reform Pinching distinguished himself by the character of his work, and in 1899 he became Director-General of his department, a post which he held for nine years. He was decorated by the Khedive and was appointed K.C.M.G. shortly before his retirement.

Sir Horace Pinching married in 1903 Ednée, daughter of Mr. Ernest Cramer, of Pressy, Geneva, by whom he had two daughters. He spent the last years of his life in Switzerland.

MEDICAL NEWS

University of Oxford

Dr. R. C. MacKeith has been elected a fellow of University College on the foundation of Dr. John Radcliffe. The Radcliffe prize for the furtherance of medical science in the University has been awarded to Dr. C. L. Cope.

University of London

At recent examinations the following candidates were successful:—

D.M.R.

Part I.—F. M. Abeles, P. A. Flood, Daniel Hugo, E. G. Lynch, Mahendra Mani, Stanley Nowell, and Tek Chand Wasson.

University of Leeds

At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—G. N. Blackburn, Olive M. Callow, J. C. Coates, Joan M. Coward, W. Davidson, W. G. France, M. Headlam, W. Hobson, K. K. Hussain, R. L. Lamming, D. M. Leiberman, D. J. McCandlish, S. Mattison, W. S. A. Oakes, R. Petticrew, G. Quayle, S. H. Samuel, Winnie Shaw, C. E. Stuart, and C. W. Ward.

Part II.—Mary Barraclough, T. M. Boyle, Julia M. Brown, D. F. Cameron, G. A. Collinson, W. G. L. Flather, Irene Haslegrave, E. H. Kitching, E. F. Lai, H. T. Levi, A. E. Penn, F. Reid, H. Silman, H. E. Steward, and C. C. N. Vass.

Part III.—E. H. Kitching (First-class Honours), G. A. Collinson (Second-class Honours), Mary Barraclough, T. M. Boyle, Julia M. Brown, D. F. Cameron, W. G. L. Flather, Irene Haslegrave, E. F. Lai, H. T. Levi, A. E. Penn, L. Rabinovitch, F. Reid, H. R. Rollin, H. Silman, H. E. Steward, D. Thackray, and C. C. N. Vass.

L.D.S.

K. S. Armstrong-Lamb, T. Stirling, T. H. H. Wilson, and T. J. Wood.

British College of Obstetricians and Gynæcologists

The following candidates have been awarded the diploma of the College after examination:—

A. K. Acharya, Annie F. Allport, W. N. Brown, Helen R. Buck, Dora Davies, Muriel H. Deem, S. K. Hutton, C. N. Jeffries, Mary K. Lawlor, Barbara H. Mitchell, James Morrissey, E. B. Murrell, J. L. Parker, Helen I. Robertson, Isabella Taylor, and S. W. Wright.

University of Liverpool

Among those who will receive the honorary degree of LL.D. at the graduation ceremonies of the University on May 24th are Prof. Arthur Harden, F.R.S., formerly director of the biochemical department of the Lister Institute, and Mr. C. Thurstan Holland, F.R.C.S., formerly lecturer in radiology at the University and president of the first International Congress of Radiology.

University of Manchester

Applications are invited for a travelling research scholarship in medicine and for pathological scholarship. Candidates must be graduates of the university who have taken the full course of clinical instruction at the Manchester Royal Infirmary. Further details may be had from the secretary of the infirmary, to whom applications should be sent not later than May 4th.

Post-graduate Course at Freiburg

A medical post-graduate course is being held at Freiburg from July 1st to 23rd, at which members of the medical faculty will give lectures. Opportunity will be given for members of the course to take part in the work of the various clinics. The secretary of the course is Prof. C. Noeggerath, Kinderklinik der Universität, Freiburg i. B. Mathildenstr. 1.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.
Thursday, April 11th.—8 P.M., Mr. Stanford Cade: Radiation Treatment of Carcinoma of the Lungs.

HUNTERIAN SOCIETY.
Monday, April 8th.—8.30 P.M. (Simpson's Restaurant, Cheapside), Annual General Meeting. Lieut.-Col. R. H. Elliot: Snakes and their Bites.

LONDON JEWISH HOSPITAL SOCIETY, Stepney-green, E.
Thursday, April 11th.—3.30 P.M., clinical meeting.

SOUTH-WEST LONDON MEDICAL SOCIETY.
Wednesday, April 10th.—9 P.M. (Bolingbroke Hospital, Bolingbroke-grove, S.W.), Dr. G. E. S. Ward: The Failing Heart.

SOCIETY FOR THE STUDY OF INEBRIETY.
Tuesday, April 9th.—4 P.M. (11, Chandos-street, W.), Dr. E. W. Adams: What is Addiction?

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
Thursday, April 11th.—8.30 P.M., Dr. M. S. Thomson: The Psychological Aspect of Skin Disease.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
Monday, April 8th, to Saturday, April 13th.—Infants Hospital, Vincent-square, W. Afternoon course in infants' diseases.—Royal Eye Hospital, St. George's-circus, S.E. Afternoon course in ophthalmology.—St. Mark's Hospital, City-road, E.C. All-day course in proctology.—Courses are open only to members and associates of the Fellowship.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
Monday, April 8th.—Noon, Dr. D. Nabarro: Septicæmia. There will be out-patient clinics every day at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

CANCER HOSPITAL (FREE), Fulham-road, S.W.
Thursday, April 11th.—4 P.M., Prof. J. M. W. Morison: The Treatment of Cancer by Radiations.

PRINCESS BEATRICE HOSPITAL, Richmond-road, S.W.
Thursday, April 11th.—9 P.M., Mr. A. Lawrence Abel: The Acute Abdomen.

TUBERCULOSIS ASSOCIATION.
Thursday, April 11th, to Saturday.—Annual Meeting will take place in Oxford.

GENERAL INFIRMARY, Leeds.
Tuesday, April 9th.—3.30 P.M., Dr. Towers: Demonstration of cardiological cases.

LEEDS PUBLIC DISPENSARY AND HOSPITAL.
Wednesday, April 10th.—4 P.M., Mr. L. N. Pyrah: Hæmaturia and its Significance.

ROYAL INFIRMARY, Manchester.
Tuesday, April 9th.—4.15 P.M., Mr. John Morley: Clinical Aspects of Diverticulitis of the Intestinal Tract.
Friday.—4.15 P.M., Mr. G. Jefferson: Demonstration of neurosurgical cases.

ANCOATS HOSPITAL, Manchester.
Thursday, April 11th.—4.15 P.M., Mr. P. G. McEvedy: Rectal Pain.

UNIVERSITY OF BIRMINGHAM.
Tuesday, April 9th.—3.30 P.M. (General Hospital), Mr. G. P. Mills: Demonstration of surgical cases.
Friday.—3.30 P.M. (Queen's Hospital), Mr. Douglas Marsh: Demonstration of cases.

GLASGOW POST-GRADUATE ASSOCIATION.
Wednesday, April 10th.—4.15 P.M. (Lock Hospital), Dr. David Watson: Venereal Diseases (Female).

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Hospital for Sick Children.—Hon. Asst. Surgeon to Ear, Nose, and Throat Dept.

Aberdeen Royal Infirmary.—Hon. Asst. Phys. Also Hon. Jun. Asst. Surg. to Ear, Nose, and Throat Dept.

Ashton-under-Lyne District Infirmary.—Two H.S.'s. Each at rate of £150.

Birmingham, Erdington House.—Jun. Asst. M.O.'s. Each at rate of £200.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.

Burnley Municipal General Hospital.—Jun. Res. M.O. £150.

Burnley, Victoria Hospital.—H.S. and H.P. Each at rate of £150.

Buxton Clinic for Rheumatism and Allied Diseases.—H.P. At rate of £150.

Cancer Hospital, Fulham-road, S.W.—Second Asst. Path. £250.

Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Hon. 3rd Asst. to Out-patient Dept.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall.—H.P. At rate of £150.

Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.

Chester Royal Infirmary.—H.S. £150.

Chichester, Graylingwell Mental Hospital.—Third Asst. M.O. £350.

Connaught Hospital, Walthamstow, E.—Cas. O. At rate of £100.

Coventry and Warwickshire Hospital.—Res. Cas. O. £125.

Derbyshire C.C.—Asst. Maternity and Child Welfare M.O. £600.

Derbyshire Royal Infirmary.—Cas. O. and Orthopædic H.S. £150.

Dewsbury and District General Infirmary.—H.S. £150.

Doncaster Royal Infirmary.—H.S. Also Cas. H.S. Each at rate of £175.

Dorchester, Dorset County Hospital.—H.S. At rate of £160.

Dover Royal Victoria Hospital.—Res. M.O. £180.

Dulwich Hospital, East Dulwich-grove, S.E.—Asst. M.O. £250.

Edinburgh City.—Depute M.O.H. £900.

Exeter, Royal Devon and Exeter Hospital.—H.S. At rate of £150.

Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.

Ilford Borough.—Asst. M.O.H. £600.

Inverness District Mental Hospital.—Asst. M.O. (Pathologist). £400.

Inverness, Royal Northern Infirmary.—H.S. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. to Asst. Surgeons. £120.

Italian Hospital, Queen-square, W.C.—H.S. At rate of £100

Kettering and District General Hospital.—Res. M.O. At rate of £200.

Kingston and District Hospital.—Res. Asst. M.O. At rate of £250.

Lambeth Hospital, Brook-street, S.E.—Asst. M.O. £250.

Leicester City.—M.O.H. £1400.

Liphook, Hants, King George's Sanatorium.—Asst. M.O. At rate of £200.

Liverpool Heart Hospital.—H.P. At rate of £100.

London Homœopathic Hospital, Great Ormond-street, W.C.—Surgeon. Also Asst. Surgeon. Also Two Res. M.O.'s. Each £100.

London Hospital, E.—Paterson Research Scholar in Cardiac Dept. £400.

London Jewish Hospital, Stepney Green, E.—Res. M.O. and H.P. At rate of £150. Also H.S. and Cas. O. Each at rate of £100.

Lowestoft Borough.—Consultant Obstetrician. 3 gns. each consultation.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.

Manchester, Withington Hospital Institution and Crumpsall Hospital Institution.—Jun. Asst. M.O.'s. Each at rate of £200.

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and H.S. Jun. H.P. and H.S. Also Cas. O. Each at rate of £100.

National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. Also Out-Patient M.O. At rate of £150 and £125 respectively.

National Hospital, Queen-square, W.C.—Res. M.O. £200. Also Hon. Surg. Asst., Asst. Surg., Asst. Phys., and Anæsthetist.

National Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 40 gns.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne Royal Victoria Infirmary.—Sen. Accident Room H.S. £150.

Norwich, Norfolk and Norwich Hospital.—H.S. £120.

Nottingham General Hospital.—Second Cas. O. At rate of £200.

Preston, Sharoe Green Hospital.—Sen. Asst. Res. M.O. At rate of £150.

Princess Beatrice Hospital, Earl's Court, S.W.—Two Hon. Anæsthetists. Also Hon. Clinical Assts.

Queen Mary's Hospital for the East End, Stratford, E.—Director of Pathology and Lyle Research Scholar. £750.

Queen's Hospital for Children, Hackney-road, E.—Asst. Phys.

Reading, Royal Berkshire Hospital.—Hon. Surgeon. Also H.P., H.S., H.S. to Ophth. and Ear, Nose, and Throat Beds Depts. Also Cas. O. Each at rate of £125.

Royal College of Surgeons of England.—Examiners.

Royal Masonic Hospital, Ravenscourt Park, W.—Res. Surg. O. At rate of £250.

St. Andrew's Hospital, Devons-road, E.—Asst. M.O. £250.

St. Bartholomew's Hospital, E.C.—Chief Asst. to X ray Diagnostic Dept.

St. John's Hospital, Lewisham, S.E.—Res. M.O. £200. Also Two Res. H.P.'s and Cas. O.'s. Each at rate of £100.

St. Leonard's Hospital, Hoxton-street, E.—Res. Med. Supt. £1000.

St. Mary Islington Hospital, Highgate Hill, N.—Asst. M.O. £250.

St. Mary's Hospital, W.—Med. Reg. (two vacancies). £200.

St. Neots, Three Counties Hospital.—Med. Supt. £1000.

St. Nicholas Hospital, Plumstead, S.E.—Asst. M.O. £350.

Sheffield, Jessop Hospital for Women.—Res. M.O. At rate of £150. Also H.S. and Res. Anæsthetist. At rate of £100.

Sheffield Royal Infirmary.—Asst. Aural and Ophth. H.S. At rate of £80.

Southend-on-Sea General Hospital.—H.P. and Cas. O. Each at rate of £100.

Sutton and Cheam Hospital.—Sen. Res. M.O. At rate of £150.

Swanley Hospital Convalescent Home, Parkwood.—Res. M.O. At rate of £200.

Truro, Royal Cornwall Infirmary.—H.S. £170.

Violet Melchett Infant Welfare Centre, Wellington-street, S.W.—Asst. M.O. At rate of £100.

Weston-super-Mare General Hospital.—Res. H.S. £150.

West London Hospital, Hammersmith, W.—Hon. Asst. Anæsthetists.

West Riding of Yorkshire County Council.—School Med. Inspector. £500.

West Suffolk County Council.—Asst. County M.O., and Asst. School M.O. £500.

Willesden General Hospital, Harlesden-road, N.W.—Hon. Anæsthetist. Also Hon. Physio-therapeutist.

Woolwich and District War Memorial Hospital, Shooter's Hill, S.E.—Hon. Laryngologist. Also Surg. Reg. £100.

Worksop, Victoria Hospital.—H.S. At rate of £160.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Wivenhoe, Essex; Stromness, Orkney; Twickenham, Middlesex; Stonehaven, Kincardine; and Turriff, Aberdeenshire.

NOTES, COMMENTS, AND ABSTRACTS

WOMEN WHO EARN

"Careers and Openings for Women"[1] is described as "a guide for girls and young women in settling the choice of a career." A more apt description would have been "A treatise on social life, more especially for the guidance of parents and their daughters." Part I. is a survey of women's employment, and Part II. a discussion of careers and prospects conveniently subdivided into chapters on prospects for girls leaving school respectively at 14, 16, 18, and over 18, for university graduates, and for exceptional girls. In the first three chapters of Part I. clear statements are to be found on the need for women to work, the opportunity for women to work, and the difficulties of women's work. Parents should realise, even if their daughters do not, that to-day most young women have to seek work.. One woman in every five must expect to continue to work all through her adult life whether she marries or not. The other four will normally marry and then either toil as hard, or harder, than before without defined payment, or will find themselves with leisure as well as responsibility. In the chapter on the difficulties of women's work, a sympathetic picture is given of the unmarried woman with family claims who has "ceased to be young." It is noted with satisfaction that the medical profession does not observe the custom of paying women less than men, and that the prejudice against women in this work has been largely overcome save in the matter of hospital appointments. The three useful appendices contain (1) a summary of the openings and trainings for women arranged in alphabetical order; (2) professional societies and trade unions; (3) an account of the Women's Employment Federation. A bibliography of seven pages is appended, and the index is a good one. In the paragraph on medicine as a career in Appendix 1, the length of training is set out as 5 to 6 years; this is somewhat optimistic, 5½ years being the extreme lower limit. Had the list of professional societies and trade unions in Appendix 2 been complete with the addresses of the bodies mentioned, the book would be even more valuable than it is.

PHYSICAL EDUCATION

A PRACTICAL summary of physical re-education covers all the important aspects of the subject.[2] Miss Rathbone begins with a review, clearly and simply illustrated, of the anatomy and mechanics of joint action and the physiology of the neuromuscular system. Faulty development due to pain, overwork, infection, and trauma is next dealt with. Then comes the chief section on reconstructive physical education. Exercises are classified according to their effects: general; on joints; for muscle tone; for group muscles. The exercises are well chosen, but the line illustrations are almost too minute to be of much assistance. Some orthopædic lesions are then mentioned, and the book ends with the treatment of mental maladjustments and some school problems.

The section on mental work is well reasoned, and this aspect could with advantage arouse more interest in this country. The idea that mental disease is often accompanied by physical symptoms (and can be helped to a certain extent by the treatment of these as regards circulation, relief of muscular tension, and so forth) is sound, and where experiments to this end have been made here they have yielded good results. The author's rational insistence that the gymnast need not know all about the case, but should treat it from a fresh and purely physical angle, is also sound. Masseuses who have worked in mental homes often complain that they have not the doctor's advantage of psychological knowledge. They forget that they have their own domain, and that to approach the patient as a physical, not a psychological, helper often simplifies the situation. The chapter on school problems reveals a sensible understanding mind, combining a good observation with a sound knowledge of life.

ERGOTOCIN.—Dr. H. W. Dudley and Dr. Chassar Moir point out that the isolation in crystalline form of a pure active principle derived from ergot by American workers, to which we drew attention last week (p. 758), was recorded only as a footnote to their paper. It is not therefore this crystalline substance, but a less pure product, which is referred to in their article as being made in large quantities by the Eli Lilly Company under the name of ergotocin.

Appointments

BACH, F. J., D.M. Oxon. [illegible], Consulting Cardiologist to the [illegible] Clinic.

BANHAM, A. R., M.B. Camb., F.R.C.S. Eng., Hon. Assistant Surgeon to the Northampton General Hospital.

BROOKS, W. D. W., B.M. Oxon., M.R.C.P. Lond., Physician in Charge of Out-patients at St. Mary's Hospital, London.

CALTHROP, G. T., M.D., D.P.H., D.M.R.E., Additional Hon. Radiologist to the Princess Beatrice Hospital, London.

DENNY-BROWN, D. E., M.B. N.Z., D. Phil. Oxon., M.R.C.P. Lond., Assistant Physician to the National Hospital, Queen-square, London.

DONALD, CHARLES, Ch.M. Aberd., F.R.C.S. Eng., Hon. Surgeon to the Hospital for Sick Children, Great Ormond-street, London.

FICKLING, B. W., M.R.C.S. Eng., L.D.S., Hon. Assistant Dental Surgeon to the Royal Dental Hospital of London.

FREWER, E. G., M.B. Camb., Resident Medical Officer to the City of London Maternity Hospital.

JENKINS, J. A., M.B. Glasg., Medical Superintendent of the District Mental Hospital, Larbert.

KELLEHER, W. H., M.D. Irel., D.P.H., Deputy Medical Superintendent (Grade II.), at the Southern Hospital, L.C.C.

LEE, R. O., M.B. Camb., F.R.C.S. Eng., Hon. Surgeon to the Northampton General Hospital.

LIGHTWOOD, REGINALD, M.D., M.R.C.P. Lond., Hon. Physician to the Hospital for Sick Children, Great Ormond-street, London.

MANDERSON, H. D., M.B. Glasg., Medical Registrar to the Out-patient [illegible]ster Royal Infirmary.

PUNCH, A. LISI [illegible]., Physician to the Hospital for [illegible]

SCOTT, GORDON, M.R.C.S. Eng., Assistant Resident Medical Officer to the City of London Maternity Hospital.

SEARS, W. G., M.D., M.R.C.P. Lond., Deputy Medical Superintendent (Grade II.), at the St. Charles' Hospital, L.C.C.

Manchester Northern Hospital.—The following appointments are announced:—

- DON, C. S. D., M.D. Aberd., M.R.C.P. Lond., Hon. Physician;
- DONALD, H. R., B.M. Oxon., M.R.C.P. Lond., Hon. Physician;
- GUTHRIE, SYLVIA, M.D. Manch., M.R.C.P. Lond., Hon. Assistant Physician for Children;
- HOLT, R. L., M.B. Manch., F.R.C.S. Eng., Hon. Assistant Surgeon;
- WATKINS, K. H., M.S. Lond., F.R.C.S. Eng., Hon. Assistant Surgeon;
- GERRARD, E. A., M.D. Victoria, M.C.O.G., Hon. Assistant Gynæcological Surgeon; and
- ARCHER, G. E., M.B. Manch., D.L.O., F.R.C.S. Edin., Hon. Aurist and Laryngologist.

Certifying Surgeons under the Factory and Workshop Acts: Dr. W. E. LOCK (Desborough, Northants); and Dr. R. A. FAWCUS (Chard, Somerset).

Births, Marriages, and Deaths

BIRTHS

ALEXANDER.—On March 24th, at Gillingham, Dorset, the wife of B. W. Alexander, M.R.C.S. Eng., of a daughter.

BANKS.—On March 31st, at 56, Gurney-drive, Hampstead Garden Suburb, to Mary, wife of A. Leslie Banks, M.D. —a son.

MARRIAGES

HILLABY—COLLINS.—On March 23rd, at Bournemouth, Hubert Hillaby, M.R.C.S. Eng., Bournemouth, to Mrs. Frances Mary Collins, of Canford Cliffs.

DEATHS

ROACH.—On March 25th, at sea, suddenly, Surgeon-Captain Sidney Roach, M.R.C.S. Eng., R.N. (retired), of Brading, Isle of Wight, aged 61.

WILLIAMS.—On March 25th, at a nursing-home, Alfred Williams, M.D. Glasg., Sussex-square, Brighton, late of Pendleton, aged 73.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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[1] By Ray Strachey. Faber and Faber. 1935. Pp. 271. 7s. 6d.

[2] *Corrective Physical Education.* By Josephine Longworthy Rathbone, M.A., Instructor in Physical Education, Columbia University. London: W. B. Saunders Co. Ltd. 1934. Pp. 292. 12s.

ADDRESSES AND ORIGINAL ARTICLES

A STUDY OF PNEUMOCOCCAL PNEUMONIA

By Daniel T. Davies, M.D. Wales, F.R.C.P. Lond.
ASSISTANT PHYSICIAN TO THE ROYAL FREE HOSPITAL, LONDON
H. Graham Hodgson, C.V.O., M.B. Durh., M.R.C.P. Lond.
DIRECTOR OF THE X RAY DIAGNOSTIC DEPT. OF THE MIDDLESEX HOSPITAL; AND
Lionel E. H. Whitby, C.V.O., M.C., M.D. Camb., F.R.C.P. Lond.
ASSISTANT PATHOLOGIST TO THE MIDDLESEX HOSPITAL

With the support of
THE ROYAL COLLEGE OF PHYSICIANS OF LONDON

II *

Type II. Pneumococcal Pneumonia

Type II. pneumonia is more severe than Type I. and has a higher mortality. It attacks the adult; it is not so "classical" clinically; it is usually accompanied by profound toxæmia; and it less often ends in a crisis. Out of Cecil's 4310 cases[21] of pneumonia, 991 (23 per cent.) were due to Type II. pneumococcus—46 per cent. of these being under forty years of age. Cole[9] in 1918 gave an incidence of 29·3 per cent., and Park[10] of 15·6 per cent., while Blake[7] reported 13 per cent. in 606 cases. Dible's[12] collected series showed a higher incidence (31·4 per cent.), and the Glasgow statistics[13] for 1930–32 one higher still (35·5 per cent.). The seasonal incidence differs little from that of Type I.

The death-rate (as in Type I.) seems to be lower in this country than in America. Thus the mortalities recorded for untreated Type II. pneumonia by Cecil[21] (441 cases), Park[10] and Cole[9] are, respectively, 48·8, 30, and 28·8 per cent., whereas Cruickshank[13] reported a death-rate in the Glasgow series of 21·5 per cent., and the recent Medical Research Council[14] gave 27 per cent. It is noteworthy that bacteræmia is far commoner in this type: in Cecil's cases it was found in 29·7 per cent. of Type I., but no less than 51·5 per cent. of Type II. There are fewer local complications however. Thus empyemata developed in 6·5 per cent. of Type I., and only in 3·8 per cent. of Type II. In this country Christie[22] has drawn attention to the high incidence of bacteræmia in Type II. infection—28 positive blood cultures in 51 cases.

Only 13 of our cases were Type II. infections, giving a low incidence of 9·5 per cent.:—

Age.		Cases.	Age.		Cases.
10–19	....	1	40–49	....	1
20–29	....	3	50–59	....	2
30–39	....	4	60	....	2

Five of these patients died.

The temperature was not so high and fluctuated more than in Type I., but the patients were nevertheless more ill. They appeared pale, toxic, and disinclined to move; this listlessness was in conspicuous contrast to the "vigorous" reaction seen in Type I. Chart 4 (that of a patient admitted on the sixth day in a very toxic condition) shows only moderate fever, but the pulse and respiratory rate were 152 and 48. Only three of the cases terminated by crisis; none had an empyema.

Agglutinins.—Systematic examination for agglutinins was made in 10 cases, and the results agreed with our findings in Type I. infection—i.e., no agglutinins were detected until resolution was in progress. Agglutinins persisted throughout the period of resolution. In 3 fatal cases none was detected before death, but in these there was no evidence that resolution was occurring.

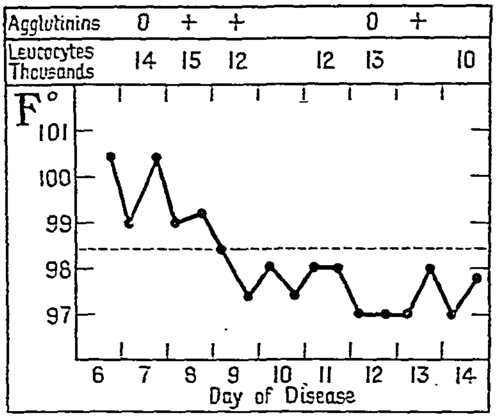

CHART 4.—Type II. pneumonia in a male aged 42.

Leucocytes.—The average leucocyte figure for this type of pneumonia was somewhat lower than in Type I. Our most favourable and uncomplicated case had the high initial leucocytosis of 33,000. The fatal cases had initial leucocyte counts of 18,000, 16,000, and 12,000. The usual figures ranged between 15,000 and 18,000. It was also noted that the fall in white cells was delayed long after the cessation of fever. Four of the patients who recovered still showed a leucocytosis a week after the temperature had become normal, although no complications were found.

Blood culture.—In 4 cases this was done and found to be negative; one of these patients died.

Serum treatment.—Type II. pneumonia is shown even in this short series to be a more serious disease than Type I., and it is unfortunate that none of our cases were admitted early enough to justify serum treatment. Elsewhere this has not proved so efficacious as in Type I. pneumonia, although Cecil[21] has shown a material improvement in a group of selected cases in which serum was given within the first three days. The largest series treated is that of Cecil:—

			Cases.		Mortality.
Treated	..	..	252	....	40·5 per cent.
Untreated	..	..	253	....	45·8 ,,

When treatment was confined to early cases (first three days of disease) the results were far more promising:—

			Cases.		Deaths.
Treated	..	..	21	....	3 (14·3 per cent.)
Untreated	..	..	20	....	13 (65 ,,)

Statistics compiled by Cecil from other sources show some reduction in mortality.

			Cases.		Mortality.
Treated	..	..	232	....	31·4 per cent.
Untreated	..	..	224	....	43·3 ,,

The Medical Research Council report[14] is also less encouraging concerning the response of Type II. to specific therapy :—

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* Part I. of this paper was published in THE LANCET last week. Part III., on the Radiology of Pneumonia, will appear in the next issue.

	Cases.		Mortality.
Treated	164	....	20 per cent.
Untreated	305	....	27 ,,

At present it has not been shown that in this form of pneumonia serum has an effect which will bear statistical analysis. With or without serum it still is a serious disease.

Type III. Pneumococcal Pneumonia

Type III. infection has always been regarded as the most fatal of all. In Cecil's[8] collection of 4310 cases there were 477 due to this type—an incidence of 11·1 per cent. Cole's[9] early series gave a frequency of 13·0 per cent. The British investigators have recorded a lower incidence—Dible[12] only 3·7 per cent. in 766 cases, and Cruickshank[13] 3·6 per cent. in 1215 only. Blake, however, in a study of 606 cases showed a high incidence (20 per cent.). In our small series there were 20 cases of Type III., a percentage incidence of 15·0.

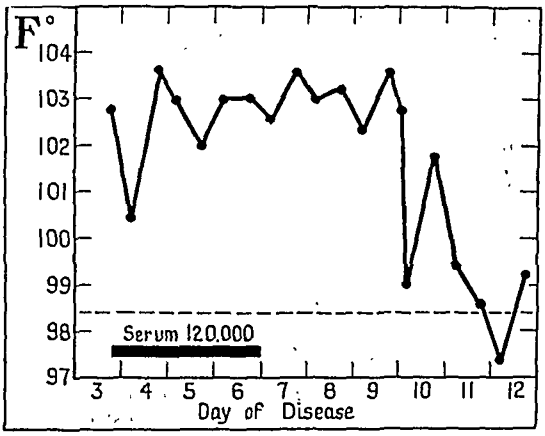

CHART 5.—Type III. pneumonia treated with Type I. serum. No specific effect.

The records demonstrate that Type III. is more likely to attack the old than the adult. Of Blake's 122 Type III. patients, only 12 per cent. were between ten and forty years of age, compared with 53·8 per cent. over forty ; whereas in his 194 Type I. patients only 19 per cent. were over forty. The case-mortality of Type III. pneumonia has been given by Cecil as 42·7 per cent., by Cole[9] as 43 per cent., by Cruickshank as 40·9 per cent. and Blake as 44·3 per cent. There is, therefore, no little agreement about the high death-rate. But while it is evident that Type III. is a most serious form of pneumonia, doubt has been cast on the virulence of the organism itself. Blake found that, irrespective of age, in 40 cases free from chronic disease the mortality was only 15 per cent. compared with 56·9 per cent. in another group of 79 who were victims of chronic disease. Blake presents good reasons for regarding Type III. pneumonia as a "highly fatal specific infective disease due, in general, not to a highly virulent organism that attacks and kills a healthy host, but rather to a debilitated host that succumbs to what is relatively a mild infection in the vigorous."

In our series of 20 Type III. infection, 15 were over forty years and 5 under. Of this group 8 died and of these 7 were over forty. Seven were relatively mild cases. The leucocytosis was found to be less than in Type I., the white cell count ranging between 10,000 and 15,000 per c.mm. In cases where the agglutinin content was systematically followed, it was found that in this infection also the agglutinins appeared as resolution phenomena, usually recognisable after a crisis or lysis, rather than coincident with or preceding it.

Of the 8 fatal cases 5 suffered from a chronic chest infection ; these patients were closely questioned and all asserted that they had expectorated a suppurative sputum for years. Four had emphysema and one was a chronic alcoholic ; two exhibited leucopenia. We consider that in this group the deaths were due to the abnormal condition of the chest as much as to the virulence of the pneumococcus.

One of our patients with Type III. pneumonia, a female aged 37, was erroneously regarded as a Type I. infection and was given serum on the third day of disease. In all 120,000 units of serum, and no specific effect was obtained (Chart 5). This case provides an excellent control as to the duration of passively introduced agglutinins. The heterologous agglutinin Type I. was detected within a few hours of the administration of the first 20,000 units of serum (10 c.cm.) and was detectable up to four days after the last dose. The heterologous Type II. agglutinin was not detected until after the second dose of serum had been given and it disappeared somewhat earlier than the Type I. Table VI. shows the fate of the passively introduced agglutinins as well as the development of the natural agglutinins.

TABLE VI.—*Case of Type III. Pneumonia treated with Type I. Serum*

Day of disease ..	3	4	5	6	7	8	9	10	11	12
Units dose of serum (thousands) ..	20	40	40	20	—	—	—	—	—	—
Crisis	—	—	—	—	—	—	—	+	..	..
Type I. agglutinins ..	+	+	+	+	+	+	+	+	0	0
,, II. ,, ..	0	+	+	+	+	+	+	0	0	0
,, III. ,, ..	0	0	0	0	0	0	0	0	+	+

Group IV. Pneumonia

About 30 per cent. of all pneumonias are attributed to "Group IV." Cecil puts the incidence at 33·8 per cent., Cole at 24·6 per cent., Dible at 30·6 per cent., and Cruickshank at 24·7 per cent. The mortality varies from 8·6 per cent. (Glasgow, 1930–32) to 31·0 per cent. (Cecil's Bellevue series). There is little predominance in any decade although it is responsible for pneumonia in children far more commonly than is the Type I. or II. pneumococcus.

In our series, 49 cases fell into this category, and 7 of the patients died, giving a mortality of 14 per cent. The number over and under forty years of age were 17 and 32 respectively, and age appeared to have the same influence in this group as in the specific types. Thus a young subject often showed a high fever, ending with an early crisis and rapid resolution, while the elderly were more likely to have a minor fever, with grave toxæmia, termination by lysis, and delay in resolution.

Anomalous and Mixed Infections

Under this heading we have collected 12 cases which illustrate the difficulty sometimes encountered in making certain of the nature of the primary infecting organism. Because this study is based on cases investigated in a routine manner, with examinations including blood and serum tests as well as typing of sputal cocci, we have come across anomalies and phenomena, some of which have not previously been recorded, and these emphasise the fallibility of sputum examination alone. The series of 12 cases has demonstrated three sources of error.

1. Cases diagnosed as pneumococcal pneumonia which later developed a streptococcal complication (6).
2. Cases diagnosed from the sputum as type infections which later proved to be due to a different type (2).

3. Cases in which there was indisputable evidence that the pneumonic process was due to infection with more than one type (4).

1. *Pneumococcal pneumonia with streptococcal complications.*—Table VII. summarises the salient features of these cases:—

TABLE VII.—*Pneumococcal Pneumonia with Streptococcal Complications*

Case.	Type pneumococcus and prevalence in sputum.	Agglutinins in blood.	Streptococcal complications.	Remarks.
1	Type I. 50 %	Nil	Nephritis.	Strept. in urine.
2	,, I. 30 %	,,	Bacteræmia.	—
3	Gr. IV. 30 %	N. t.	Empyema.	*Hæmophilus influenzæ* in sputum.
4	Type II. 50 %	Nil.	,,	
5	Gr. IV. 80 %	N. t.	,,	
6	Type I. 20 %	Type I.	Meningitis.	—

Gr. = group. N. t. = Not tested.

Each of them at the onset presented definite clinical signs of a pneumonia of lobar distribution—a finding which, supported by the discovery of reasonable numbers of pneumococci in the sputum, is usually sufficient for a confident diagnosis of pneumococcal pneumonia. Yet the subsequent course of the disease made it very doubtful whether the pneumococcus was the primary or main cause of the illness.

It is conceivable that a pneumococcal pneumonia may be capable of lighting up a streptococcal complication. This, we can conclude, is what happened in Case 6, for during the phase of recovery from the pneumonic part of the illness specific type agglutinins were detected in the blood. On the other hand, Cases 1, 2, and 4 never throughout their illness manifested any type agglutinins. It is probable that had Group IV. agglutinins been looked for in Cases 3 and 5 they also would not have been found.

One can only conclude that during influenzal periods, when most of these cases occurred, it is extremely difficult to say with certainty which of the organisms in the sputum is the cause of a pneumonic process. Experience shows that streptococcal bronchopneumonia is the commonest sequel of influenza. Our cases tend to emphasise the difficulty of diagnosis from sputum alone, and to suggest that pneumococcal antiserum should be given with caution during an influenzal epidemic.

2. *Cases diagnosed as a type infection which later proved to be of different type.*—The two cases classed under this heading are not simply examples of error in typing the sputal coccus, for the direct test was confirmed by mouse inoculation and culture. Both cases had plentiful Group IV. pneumococci in the sputum and both developed strong specific type agglutinins in the blood-serum during the recovery and resolution period, the one Type I. and the other Type III. From our previous experiences we can only conclude that these cases were really Type I. and Type III. infections despite the indeterminate content of the sputum. It is probable that this kind of case is rare. Both were extremely mild and there was very little expectoration.

3. *Cases in which the sputum contained more than one type of coccus.*—It is usually believed that in any particular case pneumococcal pneumonia is caused by only one strain of pneumococcus. We met with 4 cases, however, in which the sputum contained two types of cocci, and in 3 of these the blood-serum during the resolution period contained strong agglutinins for both cocci. This we consider is indisputable evidence that both types of cocci were concerned in the pneumonic process. The facts concerning the four cases are summarised in Table VIII.:—

TABLE VIII.—*Cases with Two Types of Cocci*

Case.	Cocci in sputum.	Agglutinins in blood.	Remarks.
6	Types I. and II.	Types I. and II.	—
7	,, I. and II.	,, I. and II.	Sterile pleural effusion.
8	,, I. and III.	,, I. and III.	—
9	Type III. and Group 4.	Not tested.	Died.

It is of interest that in Case 8 the Type III. cocci were not isolated from the sputum until late in the disease. Their presence had not been suspected until a test during the resolution period showed that the serum contained Type III. as well as Type I. agglutinins, and re-examination of the sputum by platings from the peritoneal cavity of a mouse then revealed the hitherto unsuspected Type III. coccus. This case is instructive; it is conceivable that a pneumonia due to Type I. can be overcome with serum, and yet the patient perish from Type III. toxæmia.

Laboratory Estimates of Immunity

The basis of the specific treatment of lobar pneumonia is the administration of a serum whose potency is estimated by its ability to protect mice against living and virulent pneumococci. Any simple method of demonstrating that a human serum contains the same protective substances should be of value both for prognosis and as an indication for continuing or stopping serum therapy. It is unfortunate that at present the only reliable methods for estimating the potency of an antipneumococcal serum involve the use of large numbers of mice as well as a delay of several days. Such methods are not therefore applicable to the control of human cases except in the academic study of a small series. The antibodies which may be studied include agglutinins, precipitins, and substances which will bring about the protection of a mouse. The general resistance is indicated by the leucocyte count.

Leucocyte count.—As already stated, we have found that a daily leucocyte count is very valuable for estimating general resistance and prognosis. Initial high counts (20,000–30,000) are obtained in all cases that are likely to recover; a normal count or a leucopenia in the invasive phase of the pneumonic process is an ominous sign. Coincident with the crisis there should be a dramatic fall in the leucocytes; when this does not take place complications may be anticipated.

Agglutinins.—It has often been pointed out that the agglutinin titre is not a reliable indication of the true protective power of the serum as estimated by the mouse-protection test. This inconstancy was first described by Avery, Chickering, Cole, and Dochez[23] in 1917, and has been confirmed by, among others, Parish,[24] who found a discrepancy between the agglutinin content of three samples of serum and their power of protecting mice. Yet, Cole and his colleagues,[23] in 1917, in their study of the agglutinin content of empyema fluids and the blood-serum of animals and human beings heavily infected with pneumococci, found that agglutinins were absent where infection was overwhelming, and attributed their absence to neutralisation and inhibition of pneumococcal antibodies by soluble substances produced by the bacteria themselves. They believed that the "specific soluble substance" of the pneumococcus was capable, when excessive, of neutralising all types of pneumococcal antibodies.

The test for agglutinins is easily performed. Take three drops of the patient's serum and add to each drop a small quantity of a thick emulsion of the specific type pneumococcus: agglutination occurs rapidly and can be observed with the low power of the microscope. This simple qualitative detection of agglutinins is all that is required; there is no advantage in performing a quantitative test. We have systematically studied the agglutinin phenomenon at various stages of the disease and have also attempted to use the agglutination test as a basis for serum dosage.

Sabin,[20] using a staining method, found that agglutinins for the homologous organism were quickly absorbed after injection of serum and were not detectable in the peripheral blood until either an excess had been passively administered or the patient had started actively to make his own. The heterologous agglutinins, on the other hand, were easily detectable soon after the injection of serum. Sabin claimed therefore that after serum injection disappearance of agglutinins indicated the specific type of the organism, and also that serum should be given until agglutinins were detectable. With these conclusions, as pointed out in Part I., we have been unable to agree. The detection of passively introduced agglutinins in the peripheral blood has appeared to be purely a resultant of the amount introduced rather than the amount absorbed. The following titration will make this clear:—

The agglutinin content of a given sample of Felton's serum was found to be: Type I., 1 in 1200, Type II., 1 in 80, by the macroscopic method, and by the more sensitive microscopic method Type I., 1 in 2400; Type II., 1 in 320. Dilutions of the Felton's serum were made with fresh normal human serum. When 10 c.cm. of serum are injected intravenously they are promptly diluted 500 times by the volume of the circulating blood. Unless therefore an agglutinin titre exceeds 1 in 500 it will not be detectable when 10 c.cm. of serum are injected.

Owing to the low titre of the Type II. agglutinins it is not often possible to detect them in cases of Type I. pneumonia unless a considerable volume of Felton's serum has been used.

During our investigations we have performed some 3000 agglutinin tests and conclude that agglutinins are abundantly produced in association with the process of resolution after the crisis. Before the crisis they are not detectable, and after it they are no indication that a case will be free from a relapse or complication. We do not regard them as any evidence of the sufficiency of serum therapy, and they are certainly not an indirect indication of type as suggested by Sabin.

Summary and Conclusions of Parts I and II

The examination of a case of pneumonia nowadays is incomplete without the typing of the infecting pneumococcus; we agree with Cecil that it is now far more important to know the type of pneumococcus in a case of pneumonia than it is to know what organism of the *coli*-typhoid group is responsible for an enteric fever. Typing of the pneumococcus has entered the field of necessary clinical pathology.

Gradually data are accumulating which will help to give each type infection a defined clinical picture. We have been impressed with the distinctiveness of some of our cases, and an attempt has been made, in describing our findings, to show the features typical of each. Further work is necessary in this country, for type-incidence has not been studied here as extensively as in America.

While it is now possible to type a pneumococcal sputum within two to three hours, and sometimes directly within a few minutes with reasonable accuracy, it must be emphasised that this can never be regarded as a bedside procedure. Much experience as well as good laboratory equipment are essential. It is unfortunate that attempts to type the sputum in the earlier stages of pneumonia are often far more difficult than in the later stages, and this is an important practical point. At the sixth or seventh day the sputum often yields a pure culture of the pneumococcus and the typing is easy; but during the first and second day—at the time when specific treatment gives best results—the sputum is sometimes less abundant. Furthermore, we have recorded cases in which there was reason to believe that the pneumococcus in the sputum was not the organism responsible for the underlying lung infection, and we have also described cases in which two distinct types seemed to be responsible. Again, some patients with all the signs of pneumonia produce a sputum devoid of pneumococci. Although these and other difficulties will arise from time to time, the determination is usually not difficult, and the organism found in the sputum will probably be the one responsible for the pneumonia.

Serum therapy in Type I. pneumonia has unquestionably proved, within certain limitations, to be both specific and effective. Even our small series convinces us of its advantages—and we deliberately selected the cases we regarded as the most serious. All are agreed on the beneficial effect obtainable when Type I. serum is given within the first three days of the disease, and some have indeed claimed an abortive effect if serum is given thus early. Although it would be bold to claim that serum is responsible for a crisis when administered later than the fifth day, we included among the more severe cases three whose condition we held to be desperate on the sixth day, and clinically we could only conclude that they too were benefited. The possibility of serum sickness should not prevent the giving of serum to a patient in need of the exploitation of every remedy. Our incidence of serum sickness has been somewhat high, but this was probably due to the particular batch of serum employed.

It would be a great gain in practical therapeutics if patients with Type I. pneumonia who need specific therapy to realise a crisis could be readily distinguished from those who will come safely through without any specific measures. Unfortunately there is no single test that we can rely on for this purpose. To treat all patients showing lobar consolidation with Felton's serum on the chance of striking a Type I. or II. infection is unnecessary as well as costly; indeed, such a practice might do more harm than good. It is also unwise and unnecessary to treat all Type I. infections with serum, for we know that the mortality of the untreated case is low. Hence if the case shows favourable features we are justified in withholding specific measures, and we have come to regard the following as favourable criteria: an age under forty; freedom from past chest disease and signs of bronchitis and emphysema; a normal blood pressure; and a good initial leucocytosis. On the other hand, if the patient is over forty, has long-standing chest disease, shows arterial hypertension, or has a leucocytosis below 15,000, we should feel that serum therapy was desirable. Signs of a severe infection, such as massive consolidation, cyanosis, or profound toxæmia, would always call for specific measures, irrespective of the patient's age. Mortality in Type I. pneumonia is much higher at ages over forty, and it would be a good practice to give serum to everyone above that age suffering from such infection, even though the state at the onset was reasonably good. It is often impossible during the first two or three days to forecast the course, and unfortunately from the standpoint of active therapy this is the period when an accurate prognosis is most needed.

Our experience shows that arterial hypertension adds much to the gravity of pneumonia, while chronic respiratory disease is another important factor, especially in Type III. infections. In Type I. or II. pneumonia with either of these complications there is *accordingly a relatively greater need of serum.*

In judging the progress of a pneumonia, a simple leucocyte count seems to us to be the most informative test, provided it is done repeatedly. Thus an initial count of 20,000–30,000 per c.mm. carries a good prognosis, but leucopenia or a normal count in association with signs of pneumonia is of very grave significance. A sudden fall in leucocytes usually accompanies a crisis and heralds a convalescence free from complications. On the other hand, a leucocytosis persisting in spite of a crisis, a normal temperature and pulse, is usually the forerunner of a complication.

The facilities at our disposal did not allow us to perform daily blood cultures, but cases in which an initial culture was positive did not appear to have a less favourable outcome than those in which it was negative. As to the phenomenon of agglutination which many observers have used to assess the amount of serum required, we have found no evidence that it is useful for this purpose. This reaction was to us of little clinical value. It is well known that the agglutinin content is no reliable guide to the protective power of a pneumococcal serum, and in our experience the presence of agglutinins is no indication that a case will be free of complications.

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SEPSIS AND THE SKIN *

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Septic affections of the skin are worthy of more attention and better treatment than is generally bestowed upon them. We usually know the cause of these troubles which are completely displayed to our view, and we might therefore expect to be able to apply direct and effective treatment. Instead, we find that fashion and fad often govern much of our practice, and there are as many medical and quack remedies for such simple infections as boils and impetigo as we might expect for an obscure and hopeless disease of unknown ætiology. This is not greatly to the credit of our profession. Like many other matters, these common dermatological ills of everyday practice are brought too little before the student in training by his teachers, they rarely get beyond the casualty departments of hospitals, and when they have become serious they often pass straight to the surgeon whose dermatological knowledge is not his strongest claim to fame.

I wish first to draw attention to a few practical points in regard to the common simple skin infections, and later to try and throw a little light on some of the more complicated and difficult infective dermatoses.

Simple Infections

Impetigo.—A superficial streptococcal infection is often secondary to parasites, particularly to pediculosis capitis, in children. It may be superimposed on some itching dermatosis, or may be dependent upon fissures or other foci of streptococcal infection. These should be sought first and not last. *Impetigo is a vesicular and bullous eruption, and it is* therefore irrational to treat it with a white precipitate or any other ointment. An ointment cannot intermingle with the infected fluid, and will ride on that fluid instead of sitting on the infected surface. Treatment should be by means of a paste which absorbs the infected fluid, and so comes into direct contact with the infected surface. The paste should contain a mild antiseptic and a little salicylic acid to dissolve scabs, and such a preparation as the following will cure impetigo in a few days—far more readily than any other measure and with the minimum of effort: ℞ Hyd. Ammon. gr. x., Acid. Salicyl. gr. x., Zinc Oxide gr. cxx., Amylum gr. cxx., Paraff. Moll. ad oz. i.

Fissures are the seat of streptococcal infections, but fissures are rarely primary. When they are so, they readily respond to simple cauterisation with silver nitrate or chromic acid, provided this is done thoroughly. Fissures are, in the great majority of cases, secondary to eczema or other skin disorders, and disappear without any specific treatment for the fissures if the underlying eczema is treated. Thus, a little white precipitate in a tar ointment or X ray therapy will more commonly clear, and clear permanently, the fissuring behind the ears, in the flexures of joints, between fingers, and on the palms, than will cauterisation.

Fissures between the toes are almost invariably due to ringworm infection, and the chronic eczematisation which often accompanies that infection. Treatment to be effective must—and need only—consider such mycotic and eczematous disease. Whitfield's benzoic and salicylic and, later, tar ointments are indicated here.

Fissures about the angles of the mouth and nose mean intranasal, sinus, or dental infection or irritation, in the great majority of cases. Sometimes, when thorough examination reveals no such infection, it will be found that such fissuring has been dependent upon an unerupted wisdom tooth. It must not be forgotten, however, that chronic fissures at the angles of the mouth are often symptomatic of gastric and blood diseases, particularly of achlorhydric anæmia. Fissures are symptomatic and not primary, in spite of the fact that they can themselves give rise to very serious secondary troubles, as lymphangitis, adenitis, abscesses, elephantiasis, erysipelas, and septicæmia.

That erysipelas is a streptococcal dermatitis is certain, but whether there is a specific erysipelas streptococcus responsible for those spontaneous, often serious, contagious cases which sometimes give rise to epidemics as opposed to the erysipelas which is obviously secondary to other streptococcal lesions is not clear. That the picture of erysipelas, often recurrent and eventually giving rise to some lymphatic blockage and elephantiasis, can arise secondary to a streptococcal fissure infection, to intranasal or other underlying streptococcal disease and to surgical operation, is certain. This type, usually quite mild, but occasionally severe and markedly pyrexial, does not appear to be so contagious or to give rise to epidemics. The old treatment by ichthyol locally, eliminative measures, and antiserum therapy would appear to have justified itself.

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* Based upon lectures given at a post-graduate demonstration at Leeds (March 12th, 1935) and at Grimsby (March 20th, 1935).

The treatment of cellulitis and abscess formation does not call for comment from me except to recall the value, in the later stages, of general ultra-violet light therapy, which is not practised sufficiently. The very great value of cod-liver oil to restore the balance between connective tissue and epithelium should be stressed ; nothing favours the control of granulation tissue—probably by epithelial stimulation—and the efficient healing of granulating wounds (especially when tendons are exposed) as the application of this drug itself, or in glycerin, or in a simple ointment. In this connexion also radiant heat therapy and occlusive elastoplast bandages have a place.

Whitlows.—Dry heat is always better than wet, macerating heat, and finds an important place in the treatment. The minimum of surgical interference is desirable ; extensive incisions, squeezing, probing, scraping, dilatation with sinus forceps, cauterisation, packing with antiseptics and such violent, primitive, and barbaric measures, which can be witnessed daily in most casualty departments, should be forbidden. Radiant heat, occasional swabbings with a *mild* antiseptic lotion, rest, and a simple and reasonable incision when the lesion is pointing is indicated. If fomentations are employed, they should be applied every ten minutes for an hour, and should not be covered with oiled silk, which favours maceration. Such a session of fomentations—perchloride fomentations preferably—may be repeated once or twice a day, the part being swathed in sterile, dry dressings between such treatments. Soaking in hot lotions is desirable, however, when such lesions are discharging ; occasional immersion for short periods in a peroxide bath may be permitted, but should not be continued for long.

Septic perionychia is characterised by the painful bolster swelling of the nail-fold from which pus can be expressed. It must be differentiated from ringworm and monilia infections, which are dry or almost dry and little if at all painful. Septic perionychia should never be treated surgically ; avulsion of the nail, lateral incisions, and the turning back of a flap of nail-fold are quite unjustifiable under any circumstances. The acute phase should be treated along the same lines as a whitlow, with the addition of small doses of unfiltered X rays. The chronic affection will always respond to packing of the perionychial sac with a wisp of cotton-wool soaked in pure carbolic (it is packed into the sac by means of a match stick sharpened to a wedge-end) and subsequent X ray therapy. Apart from such treatment, the part must be kept dry and warm. One or two such treatments will suffice to cure the condition, cure being manifest in obliteration of the sac so that the nail-fold again adheres to the nail-plate.

Failure to cure the condition by such means indicates that some underlying predisposing cause of the perionychia has been overlooked and, as with fissures, perionychia is very often a secondary and not a primary condition. Predisposing causes are poor peripheral circulation, which can often be improved by thyroid therapy, and anæmia, which calls for tonic treatment. The perniosis predisposes partly by reason of impaired nutrition, but mainly because of the degree of chronic œdema of tissues which accompanies it and the hyperidrosis, both tending to devitalise the skin and favouring separation of nail-fold from nail-plate. It is natural, therefore, that occupations which involve immersion of the hands in water, with similar maceration of the tissues, should also predispose to perionychia. Septic perionychia is commonly staphylococcal in origin, though it may be streptococcal or may be due to other and mixed infections.

To understand and treat the skin efficiently, we must always be prepared to read into skin manifestations the indication of some underlying local disease, or of some general constitutional derangement. It is in this way that a knowledge of skin diseases becomes invaluable to the observant physician and surgeon ; treatment becomes rational and good results are obtained. We should learn much more about our patients could we cultivate this habit, and we should find the skin not only more amenable to our attentions, but of fascinating interest and instructive.

Boils and Carbuncles

In turning to the staphylococcal infections of the skin, my suggestions for more restraint in surgical approach must become a plea for complete restraint. The pustule, the boil, and the carbuncle should never be subjected to surgical trauma, but should be nursed with a masterly inactivity throughout, rather with the physician's than the surgeon's outlook. I regard the crucial incisions, scrapings, packings, and excisions practised by my energetic colleagues with horror.

The simple superficial pustule demands to be left alone, and to be sealed-in with collodion is the best treatment. A mild antiseptic lotion as 1–2000 hydrarg. perchlor. may be swabbed round the affected part. If there is much inflammatory exudate round the pustule, or if there is some necrosis of tissue and formation of a slough, an occlusive dressing of the elastoplast type is more comfortable. In either case, the application is left in place for several days until the condition has subsided. Rest, dry heat, tonic therapy, or other symptomatic measures may be indicated.

For extensive areas of superficial pustules—so-called Bockhart's impetigo—painting with malachite-green is invaluable and causes no irritation. ℞ Hydrarg. Perchlor. ½ per cent., Brilliant Green ½ per cent., Indust. Spirit. 99 per cent. For larger boils with any considerable degree of slough and pain, dry heat, or sessions of fomentations as previously described, or better than either, compresses of carbolic in glycerin 1 in 8 may be applied.

With carbuncles exactly the same line of treatment is required, except that the patient must be at rest in bed and X ray therapy must be administered. X ray therapy is the ideal measure in the treatment of all forms of staphylococcal infection of the skin and may be used with the greatest advantage for pustules and boils, and especially for boils situated about the face and in moist flexures like the axillæ, where control of spread is difficult, and in cases of chronic furunculosis. But though we may, more often in the milder cases, choose to dispense with this measure upon occasion, we should never omit X ray treatment in any case of carbuncle, mild or severe. This has been recognised by many for years, yet surgeons continue to attack carbuncles with the knife and rarely consider this specific measure. X ray therapy should be given in fractional dosage with unfiltered X rays, one to three treatments being necessary. It is possible that staphylococcal toxoid may be a second essential weapon in this attack upon the staphylococcus, but it has not yet been put sufficiently to the test of time.

There are many minor but important points concerning these follicular infections which I should like to touch upon, though in dealing with predisposing and other factors I may seem to have left till last what should have come first. I have done that because I wished to dismiss first the local treatment, which is so important, which is the same for the whole group and which, as I have tried to stress, is allowed quite improperly and harmfully, to be surgical and interfering instead of medical and restful.

With these infections we too often concentrate upon the skin treatment, even in chronic cases, when we should be seeking and treating the cause of the chronicity. The cause may, as with streptococcal infections, be dependent upon parasitic or other skin disease, irritation or friction, maceration of the skin with natural sweat (as in the axilla) or grease (as in the seborrhœic), or maceration following employment involving contact with water or grease. Chronicity may be due to reinfection from some focus of staphylococcal infection in the nose, mouth, throat, or ears, from a perionychia or sinus. Itching and the consequent rubbing and scratching may be the cause of persistent furunculosis, and is seen about the neck, the perineum secondary to pruritis ani, and over the fronts of the thighs from the rubbing of the contents of trouser pockets. An important aggravating factor, and a cause of spread and chronicity, is fingering and squeezing of boils by the patient, and the carrying of infection to other parts of the body on the fingers. Patients should be told to leave their lesions alone, and to wash their hands in an antiseptic after touching the skin. A prescribed ritual in this matter will tend to stop the habit.

Just as I have made no mention of the use of the knife in this connexion, so I would omit reference to the hundred and one remedies recommended for the treatment of boils in the medical and lay press. I have tried to show that while their existence and advocacy does not reflect to our credit, they are likewise quite unnecessary and without serious value. That does not mean that any indications for general symptomatic treatment should be neglected; it is merely the suggestion that tin or yeast or manganese or vaccines and such-like are the cure or even the rational line of attack against which I rebel. Patients with chronic sepsis of this type are often debilitated, have mouth or nose sepsis to be treated, require attention to their diets and to gastro-intestinal function. This is particularly true of the seborrhœic who, with his greasy skin, is specially susceptible to infection, and who is particularly prone to suffer from iron and vitamin deficiency. Similarly, we must not omit to examine the urine and to review a case showing glycosuria.

Infective Seborrhœic Eczema and Sycosis

In the more complicated septic skin conditions I would suggest a direct causative relationship between these and nose, throat, and mouth sepsis. I refer to the so-called "infective seborrhœic eczema" of the head and face and "seborrhœic sycosis." Either of these may be associated with spread to other parts of the body, particularly flexures, but such spread is dependent upon the head infection and will disappear if that is cured.

In a typical case the red, glazed scalp is covered with a multitude of small green and yellow, foul-smelling pustules, readily scales, scabs, and cracks, and the greatest care in cleaning up the scalp is followed in a few hours by a fresh layer of pustules and scabs. The ears are involved and are fissured, the eyebrows are scabbed, the eyelids are red, granular, and everted, the nares and mouth are often sore and cracked. The red, sullen inflammation may spread over face and neck on to the shoulders, under the breasts, groins, axillæ, elbows, knees, always with a red, glazed, oozing, pustular, scabbed and cracked, foul, and painful inflammation. This is the complete picture, though any one part may exist alone, such as the scalp or ear affection, the blepharitis or affection of the muzzle area or of flexures. In the adult male the same condition is seen as seborrhœic eczema and sycosis involving hair margins, eyebrows, beard, and moustache. The condition occurs at any age and is often seen in quite young children and adolescents. This group is one which holds more ghosts for dermatologists than any other; they haunt him and his department often for a lifetime. They sometimes drive him to such extremes as the deliberate production of radiotherapeutic atrophy, which itself is distressing, and occasionally these patients will take their own lives, preferring death to the perpetual hell of existence under such a scourge.

The affection itself is peculiar in many features. A little consideration would suggest that it could not be a primary skin infection such as is generally believed, and none of the ideas put forward to explain the ætiology and pathology of the condition are in the least satisfying or convincing. Such patients may be given the greatest care as in-patients in hospital for months or years, and the same foul, septic, glazed, repulsive state persists or increases. That is not the behaviour of a primary skin infection, particularly a primary pyogenic infection. These patients, as a whole, and not only their skins, are particularly susceptible to infection. Thus, they have infected noses and accessory sinuses, tonsils, gingivitis, decayed and septic teeth. They also suffer respiratory and gastro-intestinal infection, but less readily than skin, nose, and throat infections. As part of the constitutional predisposition there is anæmia, often well marked, and avitaminosis and general physical debility and malnutrition. This is due, no doubt, to gastro-intestinal "seborrhœic" debility with its flatulent dyspepsia, constipation, and consequent impaired absorption.

The first essential to grasp is that this is a general and not merely a skin problem and may call for surgical, dietetic, iron, and vitamin as well as skin therapy. The second and more important fact is that the nose and throat and skin infections of head and face are not merely associated symptoms. The one is the cause of the other. The infected eczema or sycosis is directly provoked by the sinus or mouth infection. This is not a question of focal sepsis and secondary toxic manifestation; it is the direct anatomical relationship that matters, so that an infected right antrum will produce a right-sided sycosis and blepharitis, and ethmoiditis will produce an infective seborrhœic eczema of scalp, and a one-sided scalp infection will be related to an otitis media or dental sepsis on the same side. The unilateral cases are most striking, and first drew my attention to the causative relationship of the sepsis.

Surgical treatment, generally the opening and drainage of an infected antrum, is indicated as soon as the nasal or mouth sepsis is located and is usually followed by dramatic clearance of the eruption. The resistance of some patients may be so depressed that they are unable to eradicate the trouble in spite of this surgical help, and in these cases the greatest attention must be paid to diet and care of bowels; iron and vitamin therapy are necessary and the most vitalising of all measures, general ultra-violet light therapy, is given daily. By these means the most reluctant intranasal sepsis can usually be subdued, and when that is achieved the skin clears. These patients naturally require to be kept under supervision—particularly with regard to their diets, general nutrition, and health—after they are cured, for they often return to environments which would readily reproduce the old conditions and favour repetition of the round of infection.

It is interesting to note that occasionally dental or nasal infection will be directly related to the localisation and persistence of lupus erythematosus which will clear with drainage of an antrum and relapse temporarily with subsequent temporary infection of the antrum with a "cold in the head." A similar association is occasionally seen between nose and mouth sepsis and the more pustular forms of acne and of rosacea of the face. Cases which have completely resisted ordinary measures may clear dramatically when such underlying infection has been found and removed.

I have endeavoured to restrict my observations to those aspects of the subject which are of daily and practical importance, and for that reason I have made no reference to the less common pyogenic dermatoses, or to the rare toxic and allergic manifestations of focal or other sepsis.

A NOTE ON
FERRY'S MENINGOCOCCUS ANTITOXIN
IN THE TREATMENT OF ACUTE CEREBRO-SPINAL FEVER

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In 1931 Ferry, Norton, and Steele[1] found that filtrates from young cultures of the four recognised Gordon types of the meningococcus contain extracellular toxins specific to the four types, as well as a toxin common to all types; and, further, that animals injected with the toxins of the four types develop, respectively, antitoxins specific to the homologous toxins, as well as antitoxins which will neutralise the heterologous toxins. These workers claim that a polyvalent antitoxin can be prepared containing immune bodies specific to the four individual toxins.

Later, Ferry[2] showed that such an antitoxin, prepared from the horse, protected guinea-pigs prophylactically and therapeutically against fatal doses of live cultures. It was also shown that regular antimeningococcic serum prepared as an antibacterial serum by immunising the horse with the same live cultures of the four Gordon types failed to protect in like manner when used either as a prophylactic or therapeutic measure.

Further experiments by Ferry[3] indicated that the symptoms of meningococcus cerebro-spinal meningitis in laboratory animals are due in large part to the action on the central nervous system of a soluble specific toxin elaborated by the meningococcus, and that these symptoms can be modified or entirely prevented by the neutralisation of this toxin with a specific antitoxin. In a particular experiment, meningococcus toxin, when injected intracisternally into nine monkeys, produced symptoms similar to those found in meningitis following experimental inoculation of monkeys intraspinally with the live meningococcus. The symptoms of meningitis so produced by toxin may be greatly allayed or modified by mixing the toxin in proper proportion with its specific antitoxin before injection. A further point in favour of the direct relationship of this soluble toxin to the symptoms of meningitis—at least, in monkeys—is the fact that recovery from previous intracisternal injections of this toxin induced a state of active immunity against the killing dose of the live meningococcus inoculated intraspinally.

Ferry's work, if confirmed in all essential respects, would appear to provide a basis for: (1) the preparation of a polyvalent antitoxin of higher therapeutic potency than regular polyvalent antimeningococcus serum prepared from the same strains, and (2) the use of such antitoxin intravenously as well as intraspinally in order to neutralise the circulating and other toxin produced in the course of the disease. Serum has been used intravenously in cerebro-spinal fever in recent years both in America (e.g., by Carbonnell and Cook[5]) and in this country by Banks.[6]

A TRIAL OF THE METHODS

Since November, 1933, at the request of the Ministr of Health, a number of cases of cerebro-spinal feve have been treated with Ferry's meningococcus ant toxin in certain hospitals of the London Count Council. Owing to the low prevalence of the diseas in London during this period, the series so treated i far too small for satisfactory statistical analysis, bu it is felt that a preliminary statement from a clinica point of view may, at this stage, afford some guidanc to other workers in this field.

Cases of cerebro-spinal fever treated during th period at the Park Hospital, London, fall into tw groups:—

(A) Thirteen cases treated with Ferry's meningococcu antitoxin (M.A.T.). This was the treatment of choice, an was employed whenever a supply of antitoxin was availabl

(B) Eleven cases treated with a regular polyvalent anti meningococcus serum (A.M.S.) of British make. Thes were the cases which were admitted during various interval throughout the period when a supply of Ferry's antitoxi was not available.

Table I. summarises the essential information abou the two groups, omitting 3 cases fatal within 24 hour of admission. It will be seen that the two groups ar reasonably comparable as regards age-grouping, sex day of disease on admission, bacteriological type, anc method (routes, amounts, &c.) of specific treatment Group B shows a rather greater proportion admittec at a more advanced stage of the disease (i.e., beyonc the third day). On the other hand, 8 out of 12 cases in Group A were intensely acute or fulminating on admission, while in Group B only 4 out of 9 could be described in the same terms. The slight loading of Group B with "late" cases is thus perhaps compensated by the loading of Group A with more acute cases. Further, it appears reasonable to exclude from the deaths in Group A a case in which death on the eleventh day of treatment was shown to be due to cisternal hæmorrhage, the meninges being clear of exudate; and one from Group B in which the patient was almost moribund on admission and died within 48 hours. The net result of these exclusions is to yield

TABLE I.—*Summary of Cases and Results*

A = Meningococcus antitoxin. B = Antimeningococcus serum

—	A	B	—	A	B
Cases treated ..	12	9	Clinical type— Acute fulminating	8	4
Age grouping—					
0–1 year ..	—	1			
1–5 years ..	4	4	Results—		
5–10 ,, ..	4	1	Recovered ..	9	4
10–20 ,, ..	1	—	Died	3*	5†
20–30 ,, ..	3	3	Sequelæ	3	—
Male	7	5			
Female	5	4	Routes of injection—		
Day of disease on admission—			Lumb. cist. venous	8	4
			Lumb. cist. venous and ventric. ..	2	2
1st–3rd	6	3	Lumb. venous. ..	2	1
4th–7th	6	5	Lumb. cist. ventric.	—	2
8th	—	1			
Ascertained bacteriological type—			Dosage (c.cm.)—		
			Maximum ..	495	440
Group I... ..	8	5	Minimum ..	155	123‡
Group II. ..	2	1	Mean	294	249

* One each cist. hæm.; Type II.; inadequate treatment.
† One within 48 hours of admission.
‡ Excluding one death within 48 hours.

two reasonably comparable but very small groups, with the following mortality :—

Antitoxin series : 2 deaths from meningitis out of 12 cases.

Serum series : 4 deaths from meningitis out of 8 cases.

Although no conclusion can be drawn from such figures, there are several clinical considerations which strengthen the suggestion contained therein that the antitoxin may be somewhat more potent therapeutically than regular polyvalent serum, at least, for Group 1 infections. Thus, of the two deaths in the antitoxin series, one patient was admitted at the beginning of the investigation before the appropriate dosage of the antitoxin had been worked out. This patient received only four treatments, each consisting of 15 c.cm. intraspinally and 35 c.cm. intravenously, one on the day of admission, two on the following day, and one on the third day after admission, a total of 200 c.cm. Antitoxin treatment was then stopped, although the cerebro-spinal fluid was not clear. In the light of subsequent experience, it is believed that such dosage was inadequate. All subsequent cases received intensive dosage more or less conforming to the scheme shown in Table II.

TABLE II.—*Scheme of Intensive Serum Treatment*

Day of treatment.	Serum (in c.cm.).		
	Lumbar.	Cisternal.	Venous.
1st	15–25	—	80–150.
2nd	15–25	15–20	80–150 severe cases.
3rd	15–25	15–20	50–100 most severe cases only.
4th	15–25	15–20	—
—	C.S.F. clearing and sterile.		C.S.F. not clearing or organisms present.
5th	Lumb. punc. only.		15–25 c.cm. lumbar.
6th	,,		15–25 c.cm. ,,
On 5th–7th (approx.).	Nil.		Double ventricular puncture and serum.
8th	,,		,,
9th et seq.	Occasional lumb. punct.		Daily lumb. punct. 1 to 2 weeks.

C.S.F. = Cerebro-spinal fluid.

The other death in the antitoxin series was a case of Type II. infection in a child two years of age. This case appeared to make no effective response whatever to the antitoxin applied as in the above scheme. It is the only one in the series of which this could be said, although the series included another case of Type II. infection in a lad of seventeen.

A striking clinical fact was the rapid recovery made by several desperately acute cases in the antitoxin series. Five of these patients had hæmorrhagic rashes. One was seen by an experienced observer just before admission, and the prognosis given was "probably about 12 hours to live." He recovered with the sequelæ of unilateral deltoid paresis and atrophy. One, with an illness of acute fulminating type, recovered quickly, but with the sequelæ of absolute (nerve) deafness, which appeared to be present from the time of admission. One, a hæmorrhagic case, recovered rapidly, but with the sequelæ of squint and nystagmus, which was present from a very early stage. It is not improbable that paresis present from an early stage, as in these cases, indicates a dangerous degree of meningeal involvement.

On the other hand, there are two factors which tend to offset the favourable results in this small series : (1) the absence of cases under the age of twelve months, which generally have a high rate of mortality ; and (2) the small proportion of bacteriological Type II. infections which generally show a poorer response to treatment than Types I. and III.

OTHER RESULTS IN LONDON

By the courtesy of Dr. E. L. Sturdee, of the Ministry of Health, I am able to refer to cases treated in other London hospitals by meningococcus antitoxin—viz., at the North Western Hospital, Hampstead, 6 cases with 2 deaths ; and at Brook Hospital, Woolwich, 7 cases with 3 deaths.

I am indebted to Dr. Alexander Joe, medical superintendent of the North Western Hospital, for details of his cases, from which it appears that both deaths were cases of Group 2 infection, one aged six months and the other aged twenty years. Three of the four recoveries were cases of Group 1 (Type I. or III.) infection, and in the fourth case the type was undetermined. The two fatal cases each came under treatment on the fifth day of the disease, and the recovered cases on 1st, 3rd, 3rd, and 5th days respectively. The ages of the recovered cases were 4, 13, 13, and 21 years respectively. In addition to the above, Dr. Joe treated two cases as controls during the period with a regular polyvalent meningococcus serum, the result being that one patient, aged thirty-five, treated from the second day of disease, recovered ; and the other, aged twenty-one, treated from fourth day of disease, died. It is of particular interest to note that all cases treated by Dr. Joe had intensive treatment—i.e., twice daily spinal serum during the early acute stage, and also intravenous serum in rather smaller dosage than that given at the Park Hospital.

I am indebted to Dr. J. V. Armstrong, medical superintendent of the Brook Hospital, for details of 7 cases. Six of these were cases of Group 1 infection, the type in the other being undetermined. The fatal cases were aged 2, 19, and 24 years, and were admitted on 2nd, 2nd, and 3rd day of disease respectively. All three were Group 1 infections. The four patients who recovered were one aged seven months and three young adults. The method of treatment at the Brook Hospital was less intensive than at the Park and North Western Hospitals, that is, on the more conventional lines of once daily spinal serum combined with intravenous serum.

To sum up, we have a record of 25 cases treated with meningococcus antitoxin in London, with 7 deaths from meningitis and 1 death from cisternal hæmorrhage, the meningitis having cleared up. Four of the patients were known to have Group 2 infections, and 3 of these died. The case-fatality rate in the series is just slightly better than the standard 30·9 per cent. death-rate given by Flexner[7] for his large and varied collection of serum-treated cases up to 1913. Clinical considerations, however, suggest that the antitoxin used in intensive dosage is particularly valuable in Group 1 infections.

Note on CISTERNAL AND VENTRICULAR PUNCTURE

One of our cases provided a valuable lesson on the danger of hæmorrhage from cisternal puncture in an irritable and struggling patient. The anæsthetic used up to this time was local, combined with morphine hypodermically, but this was insufficient to prevent a dangerous degree of movement while the needle was being inserted. As it happened, also, the needle used in the case was a lumbar puncture needle, gauge 16, which is the largest of the three sizes usually supplied. Considering the vascular nature of the membrane lining the cistern when acutely inflamed, it appears desirable to use the finest bore needle made for the purpose (viz., gauge 18). The needle should be sharp and be graduated in centimetres up to 5 cm. It is also desirable to use a general anæsthetic in the early acute stage. Although Evipan had been used in adults, the best results have been obtained with nitrous oxide gas and oxygen. The patient being quite still and the head flexed forwards as far as possible, the needle should be entered just above the spine of the axis, and gently pushed in an upward inclined direction *exactly in the middle line*, to pierce the occipito-atlantic ligament.

Cisternal injection of serum allows of a greater concentration of antibody in the basal cisterna, in the cerebral subarachnoid spaces, and in the ventricles around the choroid plexus[8] than is possible with lumbar injection. It also provides a valuable alternative site to the lumbar region when numerous injections have to be given. It is essential, however, that all precautions be taken to avoid hæmorrhage from the operation, as the consequences of hæmorrhage from the cistern may be much more dangerous than that from the theca.

The value of *early* ventricular puncture and injection of serum in infants has been stressed by Dopter, Lewcowicz,[9] and more recently by Cantacuzène,[10] who consider that the serum is thus brought into contact with the source of the infection in the cerebro-spinal system—i.e., the primary " chorio-épendymite." It appears to be reasonable to attempt this procedure in cases that are not responding to routine treatment at some time about the 5th–8th day of treatment, rather than to wait until blockage of the system has occurred. Our series included an instance of such successful interference. On the eighth day of treatment the temperature had not fallen and the cerebro-spinal fluid contained 1260 cells per c.mm. and meningococci. Double ventricular puncture, with removal of 16 c.cm. fluid and injection of 10 c.cm. serum, was followed in 48 hours by fall of temperature to normal and a clear fluid by lumbar puncture. Thereafter convalescence was rapid. The operation may be rapidly and painlessly performed in persons of any age, by the use of the modified Goetze channel borer described by Purves-Stewart.[11]

CONCLUSIONS

(1) Meningococcus antitoxin prepared by using, as antigens, soluble toxins of Types I., II., III., IV. meningococci, appears to be a potent therapeutic agent for Types I. and III. meningococcus meningitis, as shown in a recent small series in London. (2) Its potency in Type II. meningitis is much more doubtful. (3) It is suggested that intensive dosage—viz., twice daily spinal injections in the early acute stage, combined with one or more intravenous injections—is an important factor in the success of treatment.

ADDENDUM

Since this article was written, evidence has been obtained that the usual conditions of storage of meningococcal serum in hospital may be, in some cases, responsible for failure in treatment.

A batch of meningococcal antitoxin was received in June, 1934, and stored in the ice-chest of the dispensary of the hospital. Good results were obtained with this batch until February, 1935, when two cases, one of Type II. and one of Type I., in which recovery was confidently expected, failed to show any evidence of improvement, even with the ideal intensive courses of treatment. The agglutinating power of this batch on the Type I. strain isolated was then compared with that of a fresh batch of meningococcal antitoxin on the same strain. It was found that only *a trace of agglutination in 1 in 30 dilution and none in 1 in 60 dilution* occurred with the old batch, while the fresh batch agglutinated strongly in 1 in 30 and also less strongly in 1 in 60 dilutions. (The fresh batch has also been tested therapeutically and found to be rapidly effective.)

The ice-chest in the dispensary was next investigated. The routine practice was to put in fresh ice every 48 hours during the winter. The temperature inside the chest under these conditions in February was found to be between 51° F. and 54° F.—obviously a very unsatisfactory temperature in which to store serum for eight months. Cantacuzène (loc. cit.) has stated that meningococcal serum is a serum which ages very quickly, and ought not to be used more than 5 or 6 months after collection.

The makers of meningococcal antitoxin give an expiry date 18 months beyond the date of manufacture, and this is probably far too long for the serum to retain potency under the usual hospital conditions of storage. The point is especially important in the case of meningococcal serum, since in non-epidemic times there may be long intervals between admissions of cerebro-spinal fever cases to any particular hospital.

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LARGE ENCHONDROMATA IN A CASE OF DYSCHONDROPLASIA

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THE following case is thought worthy of record because of the good function that remained in spite of large enchondromata, and because of the association of dyschondroplasia with these.

A man of 23 was sent to the London Hospital on account of deformity of the hands. When he was three years of age, swellings in the fingers of both hands were first noticed and became progressively large, but he has always been able to dress himself and cut up his food. On leaving school at the age of fourteen he became a clay labourer. He managed the work well, but was eventually discharged by his employer, who feared some accident to the deformed hands. Since then he has worked for relatives or on his own account as farm labourer, cobbler, or going about on a bicycle as a pedlar. He has established his clientele, outside which he hesitates to go, for people are shocked when they see his hands (Figs. 1 and 2).

During the last year there has not been much change in the condition. There has never been any pain, and he can knock the hands without undue pain. He complains only of the disability and deformity due to the size of the lumps. When he was nine years of age the biggest lumps were removed at operation, 7 from the left hand and 9 from the right. The wounds healed well. Some of the lumps have recurred. Since he was eight there have been swellings on the toes of both feet. These swellings have grown larger, but do not seem to be changing now. They cause him no trouble, he wears ordinary shoes, and can play football. For as long as he can remember his left elbow has shown a projection. Occasionally it aches a little, and it is not as strong as the right elbow, while movements are not quite full.

At the age of three he fell off a stool and the left arm was bandaged for a week or two for a sprain. He has had no serious illness. There is no family history of abnormality of hands or feet. Father, mother, and five brothers and sisters are alive and well.

Examination.—He is undersized, 5 ft. 3½ in., but his brother is only 2 inches taller. On the left (Fig. 1) thumb, little finger, and carpus are perfect. The other fingers and their metacarpals show numerous cartilaginous tumours, hard rather than elastic, slightly translucent, the skin over the larger ones tightly stretched, shiny and showing prominent veins. These three fingers have sensation and mobility in their tips, but owing to enlargement of their proximal parts he is unable to use them and is willing to have them amputated. The radius is normal, but its head is dislocated from the humerus, beyond which it projects 1½ inches. The ulna shows at the middle of its shaft a subcutaneous prominence, at which the whole bone is angulated. The lower end is deformed and forms a movable joint with the radius, but does not reach within ½ inch of the carpus. There is an abnormal, rounded shadow to the radial side of the coronoid process, of which it is probably a fragment. Elbow movements are full, except for the last 5 degrees of flexion and extension.

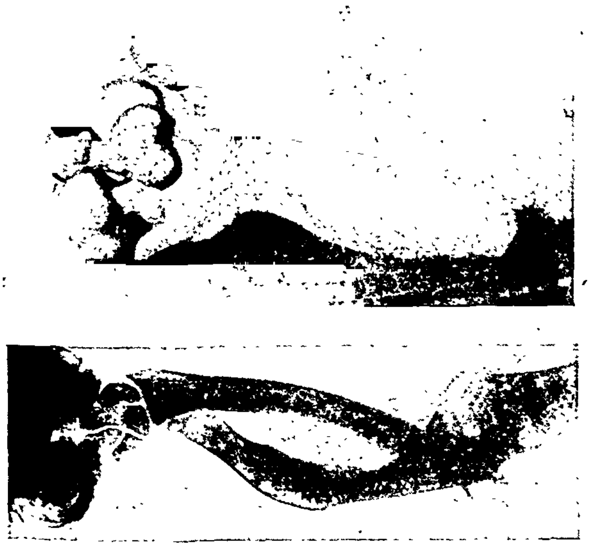

FIG. 1.—The left forearm and hand.

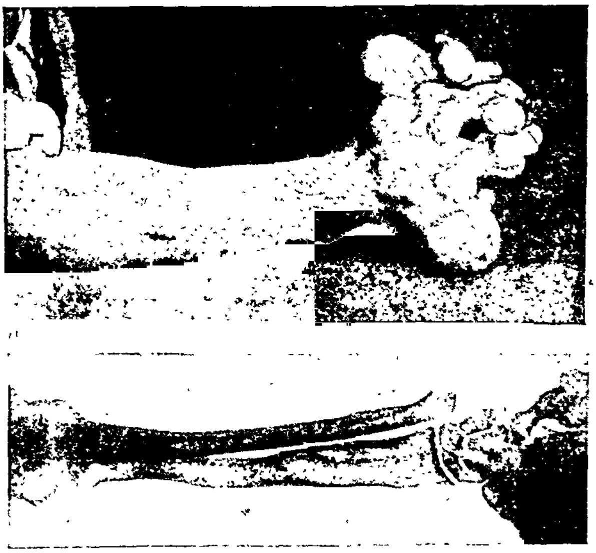

FIG 2.—The right forearm and hand.

In the right hand (Fig. 2) most of the phalanges and metacarpals show several chondromata, but all digits are useful, and he can write well. The nails of two fingers are displaced by tumours. Radiographs show that the carpus is perfect. The ulna is ½ inch longer than the radius, and its head is very prominent subcutaneously, while its styloid process is separate. The radius shows a widening of the lower end of its shaft, and here the bone is abnormally and irregularly translucent.

The feet show no disability, and he wishes no operative interference.

Treatment.—Mr. Robert Milne operated on the index and little fingers of the right hand and removed the largest two lumps by cutting and scraping. Care had to be exercised to avoid spontaneous fracture of the bones. Each tumour was covered with a bony capsule, but was easily cut with a knife elsewhere, the interior consisting of bluish cartilage. This was fairly vascular, was not encapsulated towards the rest of the bone, and showed no evidence of ossification. The wounds healed by the first intention, function was much improved, and the patient expressed himself as very well pleased with the result.

The way in which this man used such distorted hands was surprising. The fact that the tumours did not altogether cease growing at the age for union of epiphyses would suggest, according to Noble,[5] that they had become sarcomatous. The shiny appearance of some of them, with prominent overlying veins, seems to support this view, although the long history and the appearance on section do not. There was little doubt that ulceration of the stretched skin over the largest tumours would soon have occurred.

Ollier in 1899 described [1] as "dyschondroplasie" "an affection characterised by irregularity in development, evolution, and distribution of cartilaginous tissue in the bones in process of development, the cartilage seeming to be of normal structure and changing more or less slowly in the direction of ossification." His cases had pliable fingers, through the bones of which he could thrust a needle. Limbs were shortened, commonly on one side of the body only. Radiographs showed in the diaphyses streaks of diminished density resembling cartilage, and he was afraid that this cartilage might give rise to real tumours; but he did not report such an occurrence. He placed dyschondroplasia close to the condition of multiple exostoses ("diaphyseal aclasis"). The exostoses of this share with the cartilaginous masses of that the capacity for eventually undergoing ossification. He pointed out that these two conditions affect chiefly the period of growth, and that they may coexist. He contrasted dyschondroplasia with the condition of multiple chondromata. This arises also during the period of growth, but its neoplastic tumours remain indefinitely in a cartilaginous state, making no attempt at ossification.

Bentzon[3] compares the cartilage in dyschondroplasia with that in the callus in a healing fracture. He suggests that as cartilage is the body's material for repairing a fracture, so is it needed in dyschondroplasia to repair damage done by a hyperæmia resulting from imperfect sympathetic nerve-supply to the vessels.

The present case appears to be a link between the conditions which Ollier contrasted, for it shows large masses of typical enchondromata of hands and feet associated with dyschondroplasia of other bones. The haphazard distribution of ectopic cartilage in the diaphyses and the immunity of carpus and tarsus are characteristic of dyschondroplasia.[3] The appearance of long bones of only the forearms is shown in the accompanying illustrations, but similar abnormalities in his other long bones are now under investigation by the radiological department of the London Hospital.

It is interesting to find a short ulna on the left side associated with a short radius on the right, where the clinical appearance is that of Madelung's deformity. The deformity of the left forearm might, in view of the separation of a piece of the coronoid process of the ulna and the history of injury in infancy, be attributed to that common association[6]—a fracture of the ulnar shaft with dislocation of the radial head. The ulna, however, ends below in a "thimble-shaped mass of cancellous bone," and is typical of diaphyseal aclasis, in which condition inequality of growth between the bones of the forearm leads to a dislocation of the proximal end of the radius in a third of the reported cases.[2] Angular bends are not uncommon in dyschondroplasia.[4] In the present case the bowing of the ulna certainly accounts for its shortening, as much as does actual lack of length. The bowing could not have been due to yielding to thrust transmitted from the hand after dislocation of the radial head, for the lower end of the ulna does not reach to within half an inch of the carpus, while its joint with the radius is very movable. This deformity was therefore probably due not to trauma but to abnormality of bone growth.

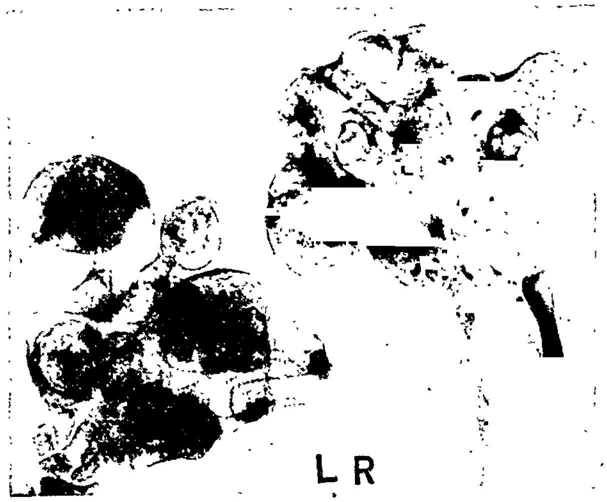

FIG. 3.—X ray of the hands.

My thanks are due for permission to publish this case to Mr. E. C. Lindsay, and for the radiographs to the radiological department of the London Hospital.

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TRAUMA AND SARCOMA

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THE existence of a causal relationship between trauma and sarcoma of bone has long been a subject of dispute. A decisive opinion is difficult on clinical evidence alone and, unfortunately, it is not possible to find corroboration or refutation by the test of strictly comparable animal experiment. The frequent unreliability of the statements of patients and relatives in regard to the time, severity, and exact site of injury gives ground for an attitude of scepticism. This attitude is supported by the vast numbers of known injuries to bone in which malignant disease does not supervene. There is general agreement that "there may be something in it," but it is desirable to advance beyond this vague concession if such a step be justifiable. Apart from the medico-legal aspect, the subject is worthy of strict and continuous inquiry in the hope that new ground may be broken in the general field of cancer research if belief in the inter-relation of sarcoma and a single episode of trauma could be established.

Each addition to the sum of clinical evidence has some value.

A CASE RECORD

A. B., a clerk aged 21, was in apparently perfect health on a day in June, 1931, when he went for a swimming lesson in his luncheon hour. Misjudging his distance while swimming on his back, he struck the back of his head with moderate force against the tiled wall of the pool. The skin was not broken. He was slightly dazed and left the water on the advice of his instructor, but was able to dress and to return to his office at the usual time. A "bump" developed during the afternoon. In the evening he and his parents jested about the accident.

The swelling did not diminish in size as the days passed, and about a fortnight after the injury a friend who sat alongside him in the office remarked that it looked a little bigger than before. This agreed with the patient's own impression and led him to visit his doctor, who diagnosed a subpericranial hæmatoma on the occipital bone, and was of opinion that it would slowly disappear. The swelling, however, continued to increase very gradually and to become slightly tender. Seven weeks from the date of injury, *and in the absence of his own doctor on holiday*, he went to the surgical out-patient department of the Royal Infirmary, where he was seen by Mr. T. M. Millar, and 8 c.cm. of blood-stained fluid were aspirated from the centre of the swelling. An incision was advised for the complete evacuation of the mass but, at the request of the patient, this was delayed until his return from holiday a fortnight later. On the second occasion the surgeon was impressed by the increase in size and tenderness, and he removed a piece for diagnosis. The report of Dr. James Davidson, pathologist to the Royal Infirmary, dated Sept. 17th, 1931, was as follows: "The tissue examined is definitely malignant in character. There are undifferentiated malignant mesoblastic cells with an *irregular formation of a primitive type of cartilage and bone*. The growth is very vascular. The condition is that of an osteogenic type of sarcoma."

The patient was referred to Mr. Henry Wade, the surgeon-in-waiting, and admitted to hospital without delay. Radiography showed no bony change. At this time the swelling had reached a size of 8 × 6 cm., with a maximum depth of about 4 cm.; it was hard and tender. The biopsy incision had healed completely. The tumour was immovable upon the skull, and its central point lay very slightly to the left of the external occipital protuberance. One small soft gland was palpable in the left suboccipital region. There was no disorder of vision and the general health was good.

On Oct. 1st, *13 weeks from the date of injury*, a radical excision of the tumour mass with the overlying skin was carried out. Very slight pitting of the outer table of the skull was observed at the centre of the exposed area, and this was carefully chiselled over. Fourteen days later the whole surface was covered with granulation tissue. Forty milligrammes of radium were then applied on a moulded stent applicator at a distance of 1 cm. for 123 hours. After ten days at a convalescent home he was readmitted for irradiation of the suboccipital area. For this purpose 40 mg. of radium were applied for 192 hours in an applicator at 1·5 cm. At this time the wound still looked healthy and the small lymph gland, previously noted as enlarged from the debris of the hæmatoma, was not palpable.

He was discharged from hospital on Nov. 7th. Four weeks later he was readmitted with a recurrence of growth at one edge. This was the first of a rapid and inveterate series of recurrences against which further attempts at treatment proved unsuccessful. All further sections showed the same histological appearances as the first. Very soon evidences of pulmonary metastasis appeared, and the follow-up department intimated his death on March 28th, 1932, approximately nine months from the date of injury.

DISCUSSION

The sequence of events, precisely known, and the unusual site of the lesion seem to warrant the assumption that the sarcomatous process was initiated by the trauma in this case. The age of the patient within the period of body-growth, the moderate severity of the injury, the presence of a persisting hæmatoma with the absence of fracture or escape of blood on the skin surface—these are the outstanding points of resemblance in this case to the great majority of other recorded instances of similar tragedy. In such cases cells which are apparently normal in form and habit are converted into an abnormal type which is described as malignant because of its effect upon the host. Biologically one cell entity is not more malignant than another. The change in type is neither fortuitous nor lawless. Apart from the properties of growth and division which are common to all cells, environment is the determining factor in the modification of cell composition and morphology. It may be of some profit to discuss the rôle of the extravasated blood as a potent factor in environment. Its presence may influence profoundly the connective tissue cells around, and such cells will tend to breed true unless further environmental influences are sufficiently strong to alter their course.

The case quoted may be taken as a text in the description of a principle underlying the physiological process of repair which, under certain circumstances, may result in malignant disease.

In the repair of damaged tissues there are two processes which act harmoniously towards restoration of form and function in the great majority of instances. Firstly, the surviving cells in and around the area of injury are stimulated to proliferate so that an abundance of new raw material for rebuilding is made available in the form of granulation tissue. Secondly, these cells are acted upon by a complex group of factors which differentiate the raw material and effect an adjustment in them by which function is restored if the damage has not been too severe. Where repair is required, these two processes, the proliferative and the integrative, act in succession as related stages. This is well exemplified in a simple fracture of a long bone where the first stage consists of the appearance of a mass of new connective tissue cells in the area of the hæmatoma. Then, by the action of complex factors in the blood stream of the surrounding hyperæmic zone and the action of enzymes from the damaged bone-cells, the mass of young cells becomes changed into callus and further differentiation and adjustment takes place under local stresses and strains until, after several months, there may be found a complete restitution of the original form of the bone.

The stimulus to proliferation is given by substances derived from the extravasated blood and from the dead and dying cells of the other tissues. A similar effect of injury can be demonstrated in the vegetable world. Haberland and others have shown how substances diffused from the injured parts of turnip tubers and leaves induce proliferation in the healthy cells. It is unnecessary for present purposes to discuss the intimate nature and working of the stimulus, although a considerable amount of knowledge has been obtained upon the subject. It will be generally conceded that a stimulation is evoked in this way. This provision of fresh material forms the essential foundation for restoration.

The second stage of the differentiation of this raw material is, as yet, imperfectly understood. In addition to qualitative humoral influences from the rapidly re-established blood-supply, it is obvious that mechanical factors come into play, probably by influencing the distribution of the new capillary system. Where good anatomical replacement has not been attained after fracture, an entirely new system of buttressing may be produced, and this is obviously determined by functional requirements. To subserve the ends of function, the "free cells" (as we may regard the raw material) are acted upon by chemical and physical influences so that individual differentiation and group remodelling become apparent.

Two general statements may then be accepted. First, that healthy cells can be stimulated to proliferate in the presence of shed blood and of substances derived from the breaking down of other tissue cells. Secondly, that the differentiation of these young cells is due to superimposed factors related to the special function of the part. These superimposed factors affect not only the form and chemical composition of the cells, but also slow down their rate of division very markedly. It is of interest to note that the young cells of the proliferative stage of repair obtain their energy by the process of glycolysis in contrast to the oxygenation from the blood stream which characterises the differentiated cell. In this respect, the early undifferentiated cells of repair resemble those other types of "free cell," the morula stage of the ovum, growth on the tissue culture slide, and frankly cancerous growth.

The question now arises: "What will be the effect of the application of a stimulus to proliferation if it be not accompanied and intimately associated with the superimposed differentiating factors determined by functional loss, as in normal harmonious required repair? To illustrate the point, we may take a crude example. If an order be given by an authority whose word is law to a mechanic to supply and fit additional parts to an engine which is already in perfect running order, it is highly probable that his meddlesome interference will ruin the engine. Material may be brought in abundance to the builder's dump, but it will only cumber the ground until the master architect imposes a plan of construction upon the confused elements which have been assembled. Environment is law to the living cell. If the proliferative stimulus be applied, proliferation will ensue. If this is not regulated by all the inhibitions of differentiation, a disharmony will result. The unwanted stimulus becomes a goad.

The tar group will stimulate the proliferation of cells. In this work the constituent dibenzanthracenes play a prominent part. It will be remembered that dibenzanthracene has a close functional relationship to some other growth factors, such as auxin in plants and œstrin in mammals. Clinicians for many generations have employed the tars to accelerate the healing of broken surfaces such as ulcers, and there is general belief in their efficacy apart from their antiseptic properties. If, however, such a tar, adjuvant where healing is in process, be applied over a prolonged period to an intact area of skin where no repair is required, a slow and abnormal proliferative response is obtained. The cellular content of the epidermis increases and shows a heaping up in papillomatosis. Unlike the thickening of the epidermis as a protection against pressure and friction, the hyperplasia from the unwanted chemical stimulus subserves no function, and Kreyberg has shown that the blood-vessels, instead of expanding for service, will be, as it were, recalcitrant and evince a capillary thrombosis. Proliferation will nevertheless continue, and after the passage of many generations of cells it becomes their chief end, as with all free and "unemployed" cells. The metabolic demands of such cells are simple and easily met from the tissue fluids. Unless extirpated before they have spread from the original locus or destroyed by radiation, the way is open for the establishment of the undifferentiated group.

Another example may be given. The discharges of a raw surface, usually with a mild degree of infection, have a stimulating effect upon the cells which they bathe. This is the basis of the Winnett Orr treatment of the widely opened wound in osteomyelitis and is an accepted fact in clinical practice. The prolonged action of these stale discharges upon the epithelialised sinus or on the skin surrounding the cloacal opening from a badly drained cavity in osteomyelitis may initiate a proliferation which will culminate in carcinoma. The retention of stale discharges and secretions is a highly probable factor in the ætiology of carcinoma in many situations. An analysis of this subject has been made in a previous paper.

I submit that the action of a stimulus to proliferation where no repair is required may be noxious because under these circumstances there is an absence or gross insufficiency of the factors which induce differentiation. To revert to our text, the subperiosteal hæmatoma which lies in a cleft between a wall of intact bone and a dense and virtually intact periosteal membrane may persist for many weeks and is a well-recognised clinical entity. There may be no trace of functional impairment and a gross imbalance obtains between the proliferative and the differentiating aspects of the repair process. A true chronic irritant is in constant operation in the sense of the best definition of chronic irritation, namely, "the persistent manifestation of the process of repair." The multiplying cells lack a functional destiny.

It is unnecessary to emphasise the close similarity between such a conception of the initiation of this "conversion" type of cancer and that of the "continuing" or congenital type, of which the best example is the renal blastoma. In the conversion type, normal cells revert under a chemical stimulus to a primitive form which will persist in the absence of a subsequent adequate stimulus to differentiation. In the "continuing" type differentiation has failed to effect a change in all the cells which should come under its complex sway, and groups may continue to grow in what approximates to the free form of the morula stage. To Nicholson belongs the credit of providing an acute analysis of this failure in the congenital cancer group in which the Cohnheim "rest" theory finds its justification.

SUMMARY

A clinical case is recorded in which a known trauma appeared to be responsible for the development of sarcoma. The view is advanced that the prolonged action of a stimulus to proliferation, where function is unimpaired, may be responsible for the physiological aberration which is known as malignant disease.

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CLINICAL AND LABORATORY NOTES

LATERAL SINUS THROMBOSIS DUE TO BACILLUS PROTEUS

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AND
SINCLAIR MILLER, D.S.O., M.C., M.D., M.R.C.P.

THE patient was a nurse, aged 20, who reported sick at the Royal Bath Hospital, Harrogate, on Oct. 15th, 1934, complaining of pain in the lower jaw following the extraction of a tooth two days before. The temperature was 104° F. There were no other local symptoms. The tooth socket appeared to be clean, and there was no swelling of the alveolus or face.

The temperature continued high, with rigors on the 16th and 17th. The patient was seen by one of us (S. M.) on the 17th. There were then no localising signs and a blood culture taken at the time was sterile. On Oct. 19th a slight facial paresis on the left side developed. On Oct. 20th A.B. P.-S. was called in. The patient made no complaint of pain or discharge from the ear, and stated that she was not deaf, but had had ear trouble as a child. The right ear was normal: on the left side there was marked middle-ear deafness, granulations in the attic region, and a small amount of pus in the fundus; but no mastoid swelling or tenderness.

She was immediately transferred to the Harrogate General Hospital, where an operation was performed two hours later. Pus was found throughout a cellular mastoid; it was brownish and offensive. A large area of the lateral sinus lay exposed; the wall of this was discoloured but by no means necrotic. Its appearance suggested thrombosis. Exploration of the sigmoid portion with a hypodermic syringe showed the sinus to contain fluid pus. Culture from this grew *Bacillus proteus* only. A culture of the tooth socket proved sterile. The internal jugular vein was ligatured and divided above the common facial. The posterior part of the lateral sinus contained clot to within 1¼ in. of the middle line.

The fever continued, and after 48 hours both wounds, which had been partially closed, were reopened to ensure complete drainage and allow frequent irrigations with eusol. The exposure and drainage of the local infection appeared to have been adequate and complete; but the temperature, nevertheless, remained high, with repeated rigors, and it became evident that a general blood infection had become established. Neither blood transfusions nor antistreptococcal serum intravenously appeared to influence the course of the disease. Repeated examination of swabs from the operation wound gave *B. proteus*, and a further blood culture on Nov. 4th gave a pure growth of that organism. The clinical condition of the patient became progressively worse and she died on Nov. 6th.

It is rare that *B. proteus* is incriminated as the cause of a fatal septicæmia. Wilson [1] in the Medical Research Council's System of Bacteriology, quotes Maymone,[2] Warren and Lamb,[3] and Irimonoiu and Popa[4] as having reported cases in which it was the cause of septicæmia. In this case there can be little doubt that the patient had a latent *B. proteus* infection of the middle ear which suddenly became active, producing an acute generalised infection.

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Harrogate.

MENINGOCOCCAL MENINGITIS FOLLOWING FRACTURE OF THE SKULL

BY B. G. MAEGRAITH, M.B. Adel., D.Phil. Oxon.
BEIT MEMORIAL FELLOW

(From the Sir William Dunn School of Pathology, Oxford)

MENINGOCOCCAL meningitis is a rare complication of fracture of the skull, but in view of the high meningococcal carrier-rate sometimes recorded in England[1] the possibility of its occurrence should not be overlooked. The case here described was seen at the Royal Infirmary, Dundee, and I am indebted to Mr. F. R. Brown for permission to publish the clinical details, supplied by the resident medical officer.

Clinical history.—The patient, a soldier, was admitted to hospital on Sept. 16th, 1934, after a motor accident. There was a long cut in the median sagittal plane of the scalp, extending from the bridge of the nose well back over the frontal bone, in which there was an obvious depressed fracture. The wound edges were pared and sewn up on the day of admission and the patient was given an injection of antitetanic serum. He improved daily until Sept. 26th, when he complained of "stuffiness" of his nose and some discharge from it. On the 28th he complained of headache and ringing in his ears, but there was then no sign of meningitis and his temperature was not raised. Five hours later in the same day his temperature had risen to 102° F., and lumbar puncture was performed. The cerebro-spinal fluid obtained was cloudy, and on Oct. 1st the organism grown from it was shown to be a meningococcus. During the whole period Sept. 28th to Oct. 1st the patient became steadily worse. There was pronounced head retraction, almost of the gun-hammer type, and progressive cervical rigidity. The patient was extremely irritable and hyperæsthetic. On Oct. 1st he was transferred to the King's Cross Hospital, and died there.

Bacteriological diagnosis.—The organism isolated from the spinal fluid was sent to Oxford on Oct. 2nd. Smears showed Gram-negative cocci which were very irregular in size and staining reaction; there were many deeply stained giant cocci. The organism failed to grow from the first culture received, which was in the form of a stab inoculation into semi-solid agar. Further cultures were therefore sent from Dundee on semi-solid agar, serum agar, and Dorset's egg medium. The only one which survived the journey was the culture on egg medium, which has consistently proved to be the best medium for the transmission of living meningococci.

The organism grew rapidly in subculture on fresh egg medium and fermented both maltose and glucose. Standard suspensions of the killed organism in saline agglutinated at a serum dilution of 1 in 25 in Group I antimeningococcal agglutinating serum, and at a dilution of 1 in 1000 of a Group II. serum prepared from a Group II. organism grown from the nasopharynx of a carrier (Scott). On stab inoculation of the organism into 5 per cent. monovalent antimeningococcal immune serum agar,[2] haloes developed round the growth on the Group II. serum agar, but not on the Group I. serum agar. The organism was therefore diagnosed as a meningococcus belonging to Group II. and serologically similar to the Group II. organisms present in the nasal passages of carriers.

There is no evidence to show how the infection occurred in this case, but it seems probable that the patient was a carrier of Group II. meningococci, which entered his cranial cavity either directly through a fissure in the base of the skull, or through the blood stream. Unfortunately, no swabs of his nasopharynx were obtained.

Jakob[3] recently described a case similar to the above, in which meningococcal meningitis developed after a fracture of the skull and recovery took place after treatment with antimeningococcal serum. In this case the patient was a meningococcal carrier.

I wish to record my thanks to Prof. W. J. Tulloch for supplies of spinal fluid and cultures obtained from the above case.

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CIRSOID ANEURYSM

BY C. F. SWINTON, Ch.M. St. And., F.R.C.S. Edin.
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IT is rare to see a cirsoid aneurysm of any considerable size, probably because they are usually detected and treated early. This case may therefore be of interest to those who have not met with the condition.

A. B., aged 23, housewife, was admitted to Hackney Hospital on Sept. 25th, 1934, complaining of a swelling the size of a large walnut over the left mastoid region. She stated that she first noticed the swelling three years previously, when it was the size of a pea. It was said to have increased rapidly in size during the six months before her admission to hospital. Eight years ago she had been struck over the left ear with a cricket bat. No other history of trauma was forthcoming.

The patient said that she could not sleep when lying on her left side because of the "blowing noise in the swelling," and that as a result of sleeplessness she had been getting more and more irritable. On examination a pulsating mass of vessels the size of a large walnut could be felt over the left mastoid region. It extended in front of, above and behind the ear and downwards to about the tip of the mastoid. A well-marked thrill and bruit were present. The aneurysm involved the left posterior auricular vessel and appeared to extend to the temporal and occipital vessels. The question arose whether the intracranial vessels communicating with the aneurysm were likewise affected; but radiograms of the skull showed no increase in size of the grooves on the inner aspect of parietal and temporal bones. This finding was confirmed by injecting the aneurysm with lipiodol and immediate radiography of the skull.

Operation was performed on Oct. 6th under general anæsthetic. In view of the examination findings I was of the opinion that the left superficial temporal, post-auricular, and occipital vessels were involved, and in order to deal effectively with the condition, and also get a more bloodless operative field, it seemed advisable to do a primary ligation of superficial temporal and occipital vessels. These two vessels were exposed by the usual exposures in front of the ear and behind and parallel with the upper part of the posterior margin of the sternomastoid muscle respectively. The vessels were doubly ligated and divided between the ligatures.

A continuous interlocking catgut stitch of the scalp was inserted, extending in a semilunar fashion well up towards the vertex, from the site of exposure of the superficial temporal vessel to the site of exposure of the occipital vessels. A similarly shaped flap distal to the interlocking stitch was turned downwards, so exposing the aneurysmal mass lying on the mastoid area. The posterior auricular vessels connected with the vascular mass were caught up with forceps at their point of entry and under-run with catgut stitches. The excision of the aneurysmal mass was fairly easily and rapidly proceeded with, in what was practically a bloodless operation field. The scalp flap was then sutured back in position and the interlocking stitch removed. The wound healed by first intention and the patient made an uninterrupted recovery. She had no more trouble with noises over left side of the scalp, slept normally, and lost her irritability. She was discharged on Oct. 27th. She has reported several times since and appears perfectly well. She shows no sign of any return of her former trouble.

(1) There is a history of trauma—the time-honoured cause—although the swelling did not appear for five years afterwards; (2) the continuous interlocking stitch of the scalp after primary ligation of the superficial temporal and occipital vessels allowed one to work in an almost bloodless field, and so excise the aneurysmal mass with comparative ease.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY

AT a meeting of this section held on April 3rd the chair was taken by Mr. PHILIP TURNER, the president, and Mr. R. L. HOLT opened a discussion on

Traumatic Shock

He described experiments on dogs and cats carried out by Mr. A. D. Macdonald and himself, and reviewed the evidence for the existence of traumatic toxæmia. Against the theory had been urged, chiefly by American workers, the following facts: (1) that no observer had satisfactorily demonstrated the presence of any depressor substance in the venous blood from a traumatised area; (2) that the difference in weight between normal and traumatised limbs found by Cannon and Bayliss failed to give a true picture of the extent of the extravasation and hæmorrhage into the damaged area; (3) that the circulatory changes of traumatic shock differed considerably from those produced by the injection of histamine or other depressor substances obtained from tissue extracts. The experimental work described had fully borne out these objections. In no experiment had there been any evidence of any depressor or histamine-like substance in blood withdrawn from a limb after trauma. If traumatic and histamine shock were compared, marked differences were seen. In traumatic shock there was diminished circulating blood volume, diminished output of the heart before there was any fall of blood pressure and marked pallor of the viscera and lungs; there was little bleeding on section of a solid viscus and very little blood in the heart, and the removal of quite a small quantity of blood caused death. In histamine shock there was no change in the blood volume, a fall in blood pressure preceded any diminution in the circulatory output, the viscera and lungs were congested, and the heart full of blood; solid viscera bled freely, and much more blood had to be removed before death ensued. Further experiments with dogs and cats had shown that on an average 45 to 47 per cent. of the total blood volume was lost by extravasation; thus the fall in blood pressure was accounted for by loss into the traumatised tissues.

The shock following muscle trauma came on so rapidly as to suggest that it was of neurogenic origin, but the fall in blood pressure took place also under spinal anæsthesia or after sympathectomy. Its cause was probably local vasodilatation. Experiments had shown no marked difference between trauma with and without spinal anæsthesia in cats. Nor did the induction of spinal anæsthesia benefit animals already in a state of shock. While there might be some neurogenic factor, its importance was very slight in comparison with the local loss of blood and plasma. This factor alone might sometimes cause death, but in other cases was only the initiating factor in secondary shock, which might be aggravated or maintained by many factors, such as idiosyncrasy and exposure to cold. It was easy to produce shock experimentally, but not so easy to maintain it. The healthy animal tended to recover: concentration of the blood was followed by dilution. Factors which maintained shock all stimulated the sympathetico-adrenal system, and intense or prolonged vasoconstriction had a very adverse effect.

Mr. Holt proposed to classify shock into three main groups: *hæmatogenic*, due to loss of blood volume; *neurogenic*, due to loss of central vascular tone—the shock of emotional states, and *vasogenic*, due to loss of peripheral tone—the shock of histamine and other drugs. Hæmatogenic or secondary shock was characterised by the following events, in order: diminished blood volume, a rise of the pulse-rate, vasoconstriction, a normal blood pressure, a diminished consumption of oxygen, and finally a serious fall in blood pressure. In primary or neurogenic shock, on the other hand, there was a fall of blood pressure with no rise of pulse-rate, vasodilatation, no diminution of blood volume or of oxygen consumption, while the fall in blood pressure was not serious if the respiratory centre was maintained.

The history of events in traumatic shock might then be expressed as follows: trauma produced diminished blood volume; this led to increased pulse-rate, vasoconstriction, diminished heart output, and a fall of blood pressure. If to the trauma were now added any cause of vasoconstriction, or any aggravating factor such as cold, vomiting, sweating, or pain, the blood volume was still further diminished, and this led to an increase of all the circulatory changes and a further fall in blood pressure. The result then was that the oxygen intake became less than the oxygen need, which resulted in a general increase in capillary permeability on the one hand and damage to the central nervous tissues on the other, the two factors together resulting in death.

Dr. DAVID SLOME described experiments carried out by Mr. L. F. O'Shaughnessy and himself, the trauma being produced by blows on the thigh muscles of the anæsthetised cat until the femur was broken. The theory which ascribed traumatic shock to a toxin elaborated in the traumatised tissues was based on the shock-like state produced by histamine. Trauma, after occlusion of the vessels, did not produce shock. Against the toxic theory were the following facts: (*a*) the quantity of depressor substances in the traumatised muscle was inadequate to cause shock; (*b*) occlusion of the venous return from a traumatised limb did not prevent shock; (*c*) there was no evidence for a toxic substance in the area of trauma or in the general circulation in the shocked state; (*d*) the changes observed in an animal in histamine poisoning differed from those seen in traumatic shock. On the whole, therefore, experimental evidence did not support the toxic theory. The theory of fluid loss had been set forth by Mr. Holt. There was no doubt that shock was due to hæmorrhage, but was it only hæmorrhage? Experimentally produced shock was not permanently relieved by blood transfusion, and the speaker and Mr. O'Shaughnessy had shown by various experiments that trauma to the limb of an animal supplied with blood by cross-circulation from a second animal, would produce shock in the first animal although only nervous pathways were intact. It was noticeable that if the fluid loss was only 14 to 20 per cent. of the total blood volume, as in some cases, the shock was none the less severe, and none the less rapidly fatal. There was no relationship between the blood loss and the survival time. The possibility of the lymphatic absorption of a toxin must not be forgotten when emphasising the results of occlusion of the blood-vessels. The nervous factor had been studied by administering trauma under spinal anæsthesia, which was undoubtedly beneficial to the animal, and by complete denervation of the limb before trauma. Both these measures modified the onset of shock, and a discharge of nerve impulses from the traumatised area had been demonstrated experimentally. Their findings, therefore, suggested that the nervous factor was important and reinforced the effect of fluid loss.

Sir HENRY DALE, F.R.S., reviewed the circumstances in which the idea of traumatic shock had come into prominence. Early in the war secondary wound shock had been causing much anxiety, and a committee had been appointed to investigate the condition. At that time the two rival conceptions had been exhaustion of the vasomotor centre with general relaxation of the arterioles, and over-activity of the vasomotor centre with lack of blood in effective currency. Hæmorrhage or sepsis could obviously produce the latter condition, and both were present in most of the war cases. It was not surprising that work under peace conditions had failed to substantiate the earlier conclusions. Neither extravasation nor painful nerve impulses were adequate explanations of shock. What did the sensory impulses do? Arterial dilatation, however produced, caused fall in blood pressure but not oligæmia—rather it increased blood volume, because fluid was taken up from the tissues. Yet in traumatic shock there was oligæmia, as in histamine shock. Nevertheless, histamine could certainly not be the cause of traumatic shock, because of the rapidity of its action. The possibility of absorbed substances, with a long-range action, had not been ruled out, however, as an important factor in some kinds of shock.

Mr. L. F. O'SHAUGHNESSY said that although the failure of Holt and Macdonald to confirm the experiments of Dr. Slome and himself was at first sight disappointing, yet the traumatised limb with a broken femur was a different proposition from one in which the muscle only was injured. In one respect Mr. Holt did grave disservice to the solution of the problem. The term "secondary shock" was a mistaken one: originally used to explain death a long time after an injury, it had lain dormant until the great war, reappearing at about the same time as the theory of traumatic toxæmia. He had never seen a case of secondary shock in clinical practice, nor met a satisfactory account of it, nor had he seen a case experimentally produced. Apparent initial recovery followed later by shock had always been explainable in the war by hæmorrhage, gas gangrene infection, or some other factor. Whereas recovery from neurogenic shock was immediate, recovery from the mildest degree of surgical shock took two or three hours. Clinical experience showed that nociceptive impulses might exist without pain.

Prof. R. J. S. MACDOWALL reminded surgeons that it would be a pity to assume that the information in the ordinary text-book on the control of the circulation represented the sum total of present knowledge. It was not generally known that adrenaline contracted the intestinal vessels and was a profound dilator of the muscle vessels. Experimental physiologists came across curious manifestations of surgical shock. He had seen shock result in an animal from stimulation of the depressor nerve. This phenomenon was not explicable on any ordinary basis and might be due to the production of vasodilator substances in quantities too large for the body to deal with in the peculiar circumstances.

Dr. GALE spoke of experiments at St. Bartholomew's Hospital showing the relation between the site of a surgical operation and the rise in blood-sugar. This rise seemed to be greater the more the solar plexus was affected by manipulation.

Mr. C. HOPE CARLTON recalled observations on 50 children in Canada who had been treated for a condition indistinguishable from secondary shock by an exsanguinating transfusion. The condition was hardly improved at all and could therefore not well have been due to the presence of toxins.

The PRESIDENT said that surgeons in the war had been much impressed by cases of secondary shock, usually associated with hæmorrhage. The typical case had closely resembled the experimental conditions described by the openers. A soldier suffering from severe crushing, laceration, and fracture would appear to be progressing well, and then a small hæmorrhage would produce a profound and fatal degree of shock. The condition had been prevented by early treatment and gas-and-oxygen anæsthesia.

OPHTHALMOLOGICAL CONGRESS

THE fifty-fourth annual congress of the Ophthalmological Society of the United Kingdom was held at the Royal Society of Medicine on April 4th, 5th and 6th, under the presidency of Mr. R. Foster Moore. The occasion was of more than usual interest in that it coincided with the meetings in London of the International Ophthalmic Council, the International Association for the Prevention of Blindness, and the International Organisation against Trachoma. A large number of foreign guests were therefore present and the proceedings had an international tinge.

The meetings of the visiting associations were mainly concerned with two points of view, both of social and legislative as well as scientific interest, namely, that of prophylaxis and that of adequate statistical recording. Under the first heading were discussed such subjects as the ætiology of trachoma, the various hereditary conditions of the eye leading to blindness and their social consequences, the prophylaxis of ophthalmia neonatorum, and so forth. Under the second, papers were read on the classification of the causes of blindness and suggestions made for the collecting of accurate and full statistics relating to the blind population in the various countries taking part. Prof. Emil de Grosz (Buda-Pesth), Prof. van Duyse (Ghent), Prof. A. Franceschetti (Geneva), Prof. von Szily (Münster), and Mr. A. F. MacCallan (London) contributed notable papers, and the general atmosphere was one of coöperative and hopeful planning for the future.

At the meeting of the British society the president, Mr. Foster Moore, read an advanced and inspiring paper on the uses of radium in intra-ocular lesions. Mr. Foster Moore is an acknowledged pioneer in this field, and his results are distinctly hopeful. The types of growth for which this somewhat heroic treatment is indicated are among the most malignant known, namely, glioma retinæ and melanotic sarcoma of the choroid. (Angiomatosis retinæ, dangerous to sight though not to life, has also given encouraging results.) The president did not advocate the substitution of radium therapy for the proven treatment by excision except in cases where the only eye was involved or where excision was refused. Glioma of the second eye was, he said, a distressing condition for which radium offered the only hope apart from excision. He cited a successful case of five years' standing with no recurrence or dissemination. The application was made by means of a radon seed, usually of 1 millicurie, filtered through 0·5 mm. of platinum, either introduced directly into the growth through an incision in the sclera or sutured to this latter over the situation of the growth and left in position for four days. Accurate localisation and delicacy of technique are essential and the operation is not without risk, since the optimum needed to kill the growth cells is very near the exposure which will start degenerative changes in the lens and normal retina. The address was certainly an outstanding contribution to the subject of radium therapy.

The president's address was followed by a discussion on diseases of the blood and their ophthalmological complications, opened by an ophthalmic surgeon (Sir Arnold Lawson), a physician (Dr. Letheby Tidy), a biochemist (Prof. E. C. Dodds), and a hæmatologist (Dr. P. N. Panton). The relationship of retinal hæmorrhages and exudates to the blood count, coagulation time, calcium content, and other blood changes was discussed from the various points of view. The afternoon was devoted to contributions by the guests, notably a paper on the localisation of retinal holes in detachment, by Dr. Marc Amsler (Lausanne), and on the treatment of the condition by a modified diathermy current by Dr. Leon Coppez (Belgium).

The following sessions were occupied by a variety of papers of interest. Mr. Tudor Thomas gave a detailed account of the microscopic appearances of two successful corneal grafts in man, the first available record on the subject. Mr. Cardell read a suggestive paper on the possible uses of polarised light in ophthalmoscopy and retinoscopy. By incorporating a double Nichol prism in the ophthalmoscope it was possible to abolish the corneal reflex and so to examine the macula easily through the undilated pupil, a procedure often of great value. Miss Ida Mann read a paper on an embryological theory of oxycephaly, which indicated that the possible primary aberration of growth lay in the visceral mesoderm of the maxillary process.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Sex and Reproductive Physiology

By J. M. ROBSON, M.D., B.Sc., F.R.S.E., Beit Memorial Fellow, Institute of Animal Genetics, University of Edinburgh. London: J. and A. Churchill Ltd. 1934. Pp. 249. 12*s.* 6*d.*

THERE are probably few physiological problems which have been subjected to more active investigation in the last ten years than that of reproduction. As the literature gains in volume and the terminology grows in complexity, so does the need arise for a periodical survey by an authority who, while familiar with intricacies, can yet direct our attention to its salient and well-established facts. In a preface, Dr. Robson explains that his treatment has been selective. He has been compelled to discuss very briefly, or even to dismiss altogether, much data which appear to have no permanent bearing on the problems which, for him, are important. Such a handling of the subject is clearly necessary, but equally clearly it will evoke criticisms from those whose work has been cursorily dealt with or overlooked. Making allowances for this and for the fact that it is probably now impossible to write a book on reproductive physiology which will please everybody, Dr. Robson's work may be regarded as fulfilling its primary purpose.

The book falls naturally into two parts. In the first, consisting of five chapters, are described the nature of the sex cycle in different animals, cyclical alterations in uterine endometrium and muscle, and the functions of œstrin and lutein. This part thus furnishes an anatomical and physiological introduction to the complex processes described in the six later chapters. These deal with the relation of the pituitary gland to ovarian activities, ovulation and fertility in primates, hormone production and excretion, pregnancy and parturition, and the mammary functions. The book concludes with a chapter on clinical applications which will be of special interest to those "clinicians who seek to incorporate into their practice recent advances in science," for whom, Prof. F. A. E. Crew explains in an introduction, this book has been primarily written. Clinical applications of our present knowledge are (1) diagnostic, (2) therapeutic. "In the field of diagnosis," says the author, "important and even spectacular progress has been made, whereas the therapeutic application of hormones yielded apparently meagre and disappointing results." The diagnostic functions are clearly described: the Aschheim-Zondek test in its various applications, the Friedman test, and the Brouha test. Indeed, details of technique are included which would be of interest to the laboratory worker rather than to the clinician. The therapeutic applications are less clearly set forth. It is suggested that œstrin may have therapeutic uses in curing amenorrhœa and sterility, in terminating pregnancy, in relieving symptoms of the menopause, and in treating hæmophilia. The therapeutic use of corpus luteum hormones is, we are told, not yet feasible. The gonadotropic hormones of the pituitary have been administered for amenorrhœa, spasmodic dysmenorrhœa, the prevention of abortion, ovarian bleeding, and for certain pelvic inflammatory conditions. Though definite instructions as to the therapeutic uses of these hormones are as yet impossible, the clinician might have been grateful for clearer guidance as to their possibilities. The book is somewhat indifferently illustrated with diagrams, photographs, and microphotographs which are not always very clear or well explained. In parts it is carelessly written. Thus the textual description on page 9 does not correspond to the diagram on the opposite page and there are several examples of loose phrasing (such as the use of the word "menstruation" for the term "menstrual cycle" on pages 94 and 95) which have confusing effects. On the whole, however, the medical reader is deftly guided into and through the obscurities of a difficult subject.

Biochemistry of the Eye

By ARLINGTON C. KRAUSE, M.A., Ph.D., M.D., F.A.I.C., Instructor in Ophthalmology, the Johns Hopkins Medical School. Baltimore: Johns Hopkins Press; London: Humphrey Milford, Oxford University Press. 1934. Pp. 264. 15*s.*

IN this monograph, No. 2 of the series issued by the Johns Hopkins Hospital and University, Dr. Krause has attempted to review briefly the investigations which have been carried out on the chemistry of the eye. The work is divided into eight chapters, which deal in order with the chemistry of the external secretion and conjunctiva, the sclera, the cornea, the uveal tract, the retina, the aqueous humour, the vitreous humour, and the lens. A very full bibliography is given at the end of each chapter, and the various conclusions reached by different workers are summarised and critically discussed. Forty-nine pages throughout the book are devoted to a study of the chemistry of the lens, and this forms the largest chapter in the work. We would have liked to hear more of the author's views on the theories of the formation of the aqueous humour, and it seems a pity that the soft, low-tension eye of diabetic coma receives no mention.

The monograph will doubtless prove of great value as a work of reference both to ophthalmologists and biochemists; some ophthalmologists who consult it may be dismayed to find that Dr. Krause presupposes a knowledge of general biochemistry and its related subjects in his readers. It would, however, have been impossible to keep the book within reasonable compass if this assumption had not been made, and for those who possess the equipment to appreciate it this work provides a valuable addition to the literature of the chemical side of ophthalmology.

Psychology and Health

By H. BANISTER, M.Sc., Ph.D., Director of Psychological Studies, St. John's College, Cambridge; Lecturer in Experimental Psychology in the University. London: Cambridge University Press. 1935. Pp. 256. 7*s*. 6*d*.

THIS is a very fair exposition of modern psychological medical problems by a trained psychologist who is a practising psychotherapist to the Papworth Village Settlement. Dr. Banister is not only experienced in the psychopathic problems of children and adults, but his training is catholic and methodical, and his comments demand respectful understanding. After a preliminary chapter on psychology and the physician, in which he urges the general practitioner to equip himself to undertake some measure of psychological treatment, at least of the child, Dr. Banister proceeds to a useful consideration of the senses in which he intends to use some of the common psychological terms, whose meaning in any article tends to vary with the author's school of thought. Successive chapters deal with mental defect; the problem child; infantile sexuality; further development; the annoyances and troubles of the healthy; effects of ill-health; the invalid; suggestion; hypnosis; the unconscious and dissociation; conversion hysteria; anxiety states; and compulsion and obsession. Thereafter the outstanding theories of Freud, Jung, Adler, and Janet are discussed each to a critical exposition, and the final chapters are concerned with methods of treatment.

Dr. Banister raises an interesting distinction between dissociation, according to Janet, and conversion hysteria, according to Freud. His account of child problems is sound and unprovocative, inclining to environmental interpretations rather than to the anxiety theories of the Freudians, which account for child neurosis on the basis of instinct frustration, particularly of infantile sexuality. This knotty problem, which forms the basis of psycho-analytic play technique, is made the subject of a special chapter. Dr. Banister rejects the psycho-analytic insistence on infantile sexuality, and suggests alternative interpretations which will appeal to all but strict Freudians. According to him, curiosity rather than actual sexual desire is the keynote of the child's interest in procreation and physical functions.

Dr. Banister is by no means an opponent of Freud; his work shows him to be a critical adherent of the wider principles. The zealots will hold that his doubts about infantile sexuality puts him definitely outside the pale; whereas those to whom not only psychoanalysis but any of its derivatives are anathema will find him far too sympathetic to the many variants of modern theory and practice, which he discusses with obvious understanding. It seems likely that his work will appeal to those for whom he writes—medical students and practitioners who need to understand something of the working of the human mind in order "to direct to favourable ends the psychological processes which inevitably influence the course of every life."

Physiology in Modern Medicine

Seventh edition. By J. J. R. MACLEOD, M.B., LL.D., D.Sc., F.R.C.P., F.R.S., Regius Professor of Physiology in the University of Aberdeen. Assisted by PHILIP BARD, Professor of Physiology, Johns Hopkins University School of Medicine; EDWARD P. CARTER, Adjunct Professor of Medicine, Johns Hopkins University; J. M. D. OLMSTED, Professor of Physiology, University of California; J. M. PETERSON, Lecturer in Experimental Physiology, University of Aberdeen; and N. B. TAYLOR, Professor of Physiology, University of Toronto. London: Henry Kimpton. 1935. Pp. 1154. 36*s*.

Prof. J. J. R. Macleod, whose death we had to record a few weeks ago, set his hand 17 years ago to the task of helping to bridge the gap between physiology and medicine. He was distressed, as so many others have been, at the contrast between the scientific and experimental atmosphere of the laboratory and the empiricism that dominates a great deal of clinical medicine; so he offered to the clinicians his now well-known book on "Physiology and Biochemistry in Modern Medicine." The book was intended to provide a basis of physiology out of which the inquiring clinician might begin to construct his own functional pathology. It was to deal with those parts of its subject whose bearing on medicine is closest, and to treat them as far as possible from the human, as distinct from the general mammalian, standpoint. The book has been of great value. In this last revision the collaborators have been increased to five—four physiologists and one physician; many chapters have been rewritten, and much new and useful material has been incorporated.

This is not to say that the gap which led to the original production of the book has yet been successfully bridged. The clinical end of the bridge is not so firmly grounded as the physiological end. The authors sometimes seem to have overlooked the very point at which the physician is unable to make progress. For example, a physiologist's critique of the various forms of test-meal would have been welcome; the statement that gastric HCl is "decreased" in pernicious anæmia, and the assertion that dystrophia adiposo-genitalis is undoubtedly due to a lesion involving the anterior pituitary, suggest a lack of familiarity with ascertained clinical and pathological fact. Even in his own field of carbohydrate metabolism Prof. Macleod has omitted to discuss the mysterious effect of the composition of the diet, on the efficiency with which the body deals with ingested sugar, an effect which has been known for years, and which no doubt underlies the success of the modern high carbohydrate diabetic diet.

Perhaps it is too much to expect the interdigitation of physiologist and physician over the whole range of medicine, and both may be better served by collaboration in restricted fields.

Synopsis of Pediatrics

By JOHN ZAHORSKY, A.B., M.D., F.A.C.P., Professor of Pediatrics and Director of the Department of Pediatrics, St. Louis University Medical School. Assisted by T. S. ZAHORSKY, B.S., M.D., Assistant in Pediatrics, St. Louis University Medical School. London: Henry Kimpton. 1935. Pp. 359. 17*s.* 6*d.*

THE word "*synopsis*" has come to have such a specialised connotation in this country that it usually suggests a cram-book on the lines of the old "Paley's Ghost" of the Little-go. This volume is not that sort of synopsis, but is, rather, a short text-book of pædiatrics; it is well illustrated with 77 photographs and diagrams and 6 coloured plates, and should serve as a useful introduction to the subject as well as a manual for rapid revision. It has been reduced to its very modest size by the use of type that is unpleasantly small for prolonged study, but it contains a vast amount of material at a most reasonable price. It is marred by a few definite misstatements and omissions which could easily have been avoided. Gaucher's disease, for instance, is described as "a chronic enlargement of the spleen caused by a deposit of large endothelial cells." Banti's disease, twice referred to, is said to be extremely rare in childhood, but is not described or defined. It is a pity that radiograms of the chest have not been consistently reproduced as either positives or negatives. These defects, however, are not serious enough to make the book unsuitable for its purpose, and students who want a concise review of pædiatrics, without entering deeply into controversial matters, will be well advised to procure it.

Groedel's *Roentgendiagnostik in der Inneren Medizin*

Lief. 1. Fifth edition. Edited by HEINZ LOSSEN. Munich: J. F. Lehmann. 1934. Pp. 186. RM.24.

THIS book forms the first part of the fifth edition of Dr. F. M. Groedel's text-book and atlas of X ray diagnosis, which is being produced in six parts by many authors. Groedel and H. Lossen contribute a very full description of technique, including that of kymography and cinematography. The same authors discuss the legal aspects of radiology, while Groedel and K. Saller deal with physical constitution. From the pen of the late Prof. G. Holzknecht comes a description of his technique for the localisation and measurement of internal organs. O. Schnaudigel provides a short chapter on the eye.

To the general radiologist the most interesting chapter is that by H. Wintz on the changes found in disturbances of the internal secretions. It is a mine of information on a little-known subject. H. Peiper's account of the investigation of the nervous system is invaluable to those radiologists who have opportunities of carrying out such work. We note the author's admonition that encephalography and ventriculography are not to be undertaken lightheartedly by the inexperienced.

A word must be said about the format of this work. Its 41 plates are among the best we have seen. The letterpress is rendered clear by the skilful use of different types. It is a puzzling fact that only in Germany do text-books on radiology seem to be produced in the grand manner. There is evidently a market for them such as does not exist in countries which consider themselves more prosperous. The editor, authors, and publishers alike are to be congratulated on their work.

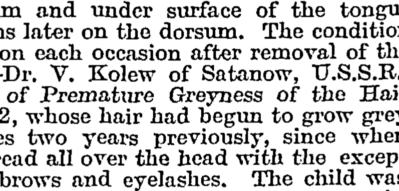
British Journal of Children's Diseases

IN the January–March issue (Vol. XXXIII.), in a paper entitled Some Observations on Rheumatism in Childhood, Dr. T. Warwick Preston reviews the work of the past four years at the Elizabeth Bullock, Putney, and Downham Supervisory Centres, his conclusions being as follows: (1) pains of the "growing pain" type occasionally prove to be an insidious form of rheumatism which may attack the heart; (2) many pains which may appear to be rheumatic are caused by minor orthopædic conditions and general debility; (3) a certain number of children continue to complain for a prolonged period of aching limbs for which no adequate explanation is forthcoming; (4) cases of insidious carditis are usually the result of a definite subacute attack of rheumatism; (5) "growing pains" are uncommon in children definitely known to have had acute rheumatism; (6) among children with serious rheumatic carditis the general condition is remarkably good and complaints of all kinds are rare; (7) there is evidence that the heredity factor is a real one.—In continuation of his Analysis of Over Four Thousand Cases of Educational Deafness, Mr. Macleod Yearsley deals with cases of acquired deafness due to congenital syphilis and chronic middle suppuration (for which in the great majority of cases no cause could be found), chronic middle-ear catarrh, otosclerosis, and injuries of the ear.—Dr. P. H. Newman reports a Case of Double Riga's Disease in a male infant of 6 months, in whom an ulcer first appeared on the frenulum and under surface of the tongue and four months later on the dorsum. The condition healed rapidly on each occasion after removal of the incisor teeth.—Dr. V. Kolew of Satanow, U.S.S.R., reports a case of Premature Greyness of the Hair in a girl aged 12, whose hair had begun to grow grey on both temples two years previously, since when canities had spread all over the head with the exception of the eyebrows and eyelashes. The child was otherwise normal, and there were no similar cases in the family. Kolew attributes the condition to the fact that both the parents were elderly at the time of the child's conception.—The abstracts from current literature are devoted to tuberculosis.

NEW INVENTIONS

A NEW LOBECTOMY CLAMP

THE clamp here illustrated has been designed by us for holding and crushing the bronchus and pedicle of the lobe during the operation of lobectomy. The ordinary snare occasionally comes off the pedicle at the critical moment, but this clamp will give a firm hold and not slip, as it has great crushing power, while the longitudinal serrations of the blades render it possible to cut the lobe away absolutely flush with the clamp with safety. The upturned end renders the tying of ligatures or stitches round the pedicle easy. The clamp is made in two sizes for adults or children, and is now manufactured by the Medical Supply Association Ltd., 167, Gray's Inn-road, London, W.C.1, and is available for general medical supply.



W. H. C. ROMANIS, M.Chir., F.R.C.S.,
T. HOLMES SELLORS, F.R.C.S.

THE LANCET

LONDON: SATURDAY, APRIL 13, 1935

SCOTTISH SICKNESS EXPERIENCE

WHAT death-rates meant to the health authorities last century, sickness-rates mean to-day. The sanitary movement last century demanded for its efficiency registration of deaths and, later, notification of infectious diseases. The health movement this century, as it develops more and more into individual care, is creating a similar demand for exact information on the incidence and distribution of all forms of sickness. This demand may never be met by any complete system of sickness registration—probably it would be undesirable if it were; and it is therefore necessary to turn to full account every available channel of information. The hospitals, schools, and insurance medical practice are the most obvious sources of exact data; and of these, by far the most valuable, both for medicine generally and the work of the health authorities, is the last. Four years ago Scotland initiated a scheme for the recording, analysis, and study of sickness among the insured population. The idea was to extract from insurance medical certificates information about the causes of incapacitating sickness, and its distribution by age, sex, locality, and occupation. The motives behind the scheme were no doubt mixed: the Department of Health, who are responsible for it, could not be blind to its uses for checking up on certification. But from the first the Department, as well as outside observers, saw that it would justify itself only by the light it might throw on medical and public health problems. The scheme has obvious limitations. For example it records only incapacitating sickness; and it deals only with the industrial population between 16 and 65 years of age (more than a third, however, of the total population of Scotland). But with all these and other limitations the scheme is the biggest attempt yet made in Great Britain to supplement the national system of vital statistics. It should give us a measure of the extent of incapacitating sickness in this large part of the population, should reveal the causes in their order of importance, variations by age, sex, locality, and occupation, and should reach out to tell us why.

The fourth report on the scheme, that for the year to June 30th, 1934, has now been published.[1] It contains, in addition to all the features of the previous reports, special studies on sickness in certain occupational groups (mining and agriculture and fishing), the increase in infectious diseases, and sickness in the Highlands and Islands. It is the best of the series, and should finally remove any doubts that may have been entertained about the value of the scheme. In some respects the sickness returns for the year are the most favourable since the summaries were first compiled four years ago. The insured population numbered 1,689,468, and the total number of completed incapacities was 341,066 (a rate of 202 per 1000 insured persons) compared with 401,744 (238 per 1000) in 1932–33, 359,811 (213 per 1000) in 1931–32, and 378,742 (224 per 1000) in 1930–31. Married women show by far the highest rates in each of the four years, but these are coming down faster than the rates for single women and for males. The days of incapacity amounted to 16,870,515, equivalent roughly to 10 days of sickness per insured person during the year, a figure that is appreciably lower than that for last year and slightly lower than the average (10·28 days) for the preceding three years. The improvement over the previous year is mainly due to a big reduction in cases of influenza and, in a lesser degree, its correlatives—bronchitis and pneumonia. There were increases in infectious diseases (chiefly scarlet fever, erysipelas, and diphtheria), minor diseases of the upper respiratory tract, tonsillitis, skin diseases, superficial septic and inflammatory conditions, rheumatism, accidents, and nervous debility, and slighter increases in tuberculosis and cancer. Sex and age differences in the incidence and duration of incapacities are set out in a series of tables but, apart from the rapid improvement in married women, there is no outstanding new point to record. The geographical distribution shows, as last year, a lower incidence and higher duration in burghs than in counties. The detailed analysis brings out that the incidence-rates in mining areas are conspicuously high, and in the highland rural districts conspicuously low. Among nine broad groups of occupations, mining shows by far the highest sickness-rates for males (326 per 1000). It is followed by textile and paper workers (208), makers of foods and drinks (194), transport workers (192), agriculture (165), metal trades (164), commercial occupations (160), building trades (156), and personal service (138).

The special study on sickness among miners during the three years ended June 30th, 1933, is expressly a preliminary effort to introduce the subject of occupational sickness. The difficulties are pointed out. Selective recruitment, for example, the concentration of particular industries in a few localities and other factors have to be allowed for. But the difficulties will not seriously impede a study that is of major importance to preventive medicine. Hitherto knowledge of occupational sickness has depended mainly on death-rates. As previous reports in this series have pointed out, there are gross differences between causes of death and of incapacitating sickness, and a large proportion of the total incapacities are not such as to terminate fatally. Preventive measures therefore may easily miss the mark if they are based only on a study of death-rates. It is brought out in this special study that, over the three years, miners have an average annual incapacity of 18 days per miner, compared with 8·7 days for other men. Men in the coal-fields not being miners have a lower average duration of incapacity not only than miners but than all males in Scotland (less miners)—a fact which

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[1] Department of Health for Scotland. Report on Incapacitating Sickness in the Insured Population of Scotland during the year July 1st, 1933, to June 30th, 1934. Edinburgh: H.M. Stationery Office. Pp. 72. 9d.

and the medical profession. The opposition seems to be coming from those who, like Lord SANDERSON, wish to see all medical services municipalised or nationalised, and who look forward to the time when all sickness will be a charge on the State.

A number of reasons have contributed to the popular demand for increased pay-bed accommodation. Illness is less readily tolerated and health more anxiously sought than it was a generation or more ago. There is certainly less fatalism with regard to ill-health, attributable, we may hope, to the wider public realisation of what medicine has now to offer in the alleviation and cure of sickness. It is common knowledge, for instance, that acute appendicitis can be cured by operation, and that a failure to recognise it may be fatal; that under optimum conditions a broken bone can generally be set so that good functional recovery results; that dyspepsia, even of long standing, may be due to an ascertainable cause whose removal leads to permanent relief. But it is also true that for the diagnosis of acute appendicitis a specialist opinion may on occasion be required, and for its surgical treatment a competent surgeon, an operating theatre, an anæsthetist, and skilled assistance; that an X ray plant may be necessary not only for the diagnosis of a fracture but also for periodic control of its progress under treatment in plaster or splint; and that for the treatment of dyspepsia not only radiological examination of the teeth and of the whole digestive tract may be needed, but pathological investigation of the contents of the stomach and of the excreta, as well as of the blood, together with continued observation of the patient—all this in what may seem at first to be a simple case. Reckoned in terms of money the thorough investigation of a case of serious illness may easily cost £20–£50, and its treatment £100–£200. The reduction of this expense associated with admission to a pay-bed in a voluntary hospital is chiefly due to economy in the cost of special investigations, and this is worth noting, since it is customary, but rather unfair, to blame nursing-homes for the great expense of illness. It may well be far less expensive to be ill in a nursing-home than in a private house, notably when the patient is ill enough to need some nursing by night as well as by day, but not so ill as to require the full-time services of a nurse. The real grievance of patients against the accepted method of organising charges and service in nursing-homes is that the fees payable, however high, are not intended to cover full-time service even for the crucial days following a severe operation, and the bill for the first week may well be swelled by a charge of 6 to 8 guineas for "special nursing." This custom applies also to patients in private rooms in hospitals, and a welcome reform would be the introduction of a weekly charge to include all nursing deemed necessary by the matron or the medical man in charge. The fees to include ordinary nursing attention payable in hospital private beds and in nursing-homes overlap to the extent that most nursing-homes have rooms available at 8 and 9 guineas a week and that pay-beds cost 3 to 10 guineas a week, while in at least five hospitals, according to the current edition of the Hospitals Year Book, private rooms are available at 12 guineas a week.

Among the biggest and therefore most dreaded expenses of illness, however, are the fees due to specialists, and it is here that a patient in a pay-bed may save a good deal. Outside the hospital the professional man has to give much of his personal attention and time to the details of management of any patient under his care. In a pay-bed he will be assisted in this respect by his resident medical officer, and therefore he can afford to be available for consultation, when required, for a smaller fee. Moreover, having more patients in one building and that building being in close proximity to his hospital wards, he can economise the time otherwise spent in going from one patient's house or nursing-home to another. Even more important than these considerations may be the fact that the specialist's habit of giving voluntary service to the sick poor affects his attitude to the patients under his care in the neighbouring paying block, and he is more inclined to charge a very much reduced or even a nominal fee for the work he does there. This applies also and to an even greater extent to the special investigations, because the plant required, whether biochemical, pathological, or radiological, is readily accessible, being provided by the voluntary hospital for its ordinary patients and thus available for paying patients of small means at cost or little more than cost price for each investigation done. The charges payable for such services by patients able to pay 12 guineas a week for a room should, of course, be maintained at the level normally payable outside the hospital, whatever the adjustment decided on as to the proportion to be kept by hospital and specialist. Specialists gain something from the possibility of accepting modest fees from patients who wish to pay their consultants but are unable to do so when admitted to the general wards reserved for the sick poor. Moreover, apart from the convenience of having many patients aggregated under one roof, they are able to keep patients under their care with whom they might otherwise lose touch.

Lastly the point of view of the voluntary hospitals is to be recalled. It is obviously their duty to provide a service for a social class which particularly needs it. The wants of the sick poor are being increasingly well provided for, but to those with limited incomes sickness brings a financial embarrassment for which it is difficult to make adequate provision. Good work done in a pay block will moreover bring gratitude to the institution that provides the beds, and this will increase the public support on which voluntary hospitals largely depend. There is of course another aspect for the patient. It is difficult to assess the comparative advantages and disadvantages of institutional treatment. Expense is often a determining factor in sickness and ill-health, but economy and efficiency do not necessarily go hand in hand, and while there are advantages in being in an institution where a resident medical officer is available, there are counter-advantages in being

the prejudice that often sets the advocates of "clinical" and "laboratory" methods in opposite camps. The X ray tube is no less "clinical" than the thermometer and the sphygmomanometer, it is only more expensive; but it is becoming increasingly accessible, and should be used neither more nor less than is justified by the greater value and precision of the results it gives.

THYROTOXICOSIS WITH NORMAL B.M.R.

When goitre is of long standing the circulatory apparatus may be considerably damaged though the basal metabolic rate is not above normal limits. Even in young patients, however, good evidence of thyrotoxicosis—such as tachycardia, alterations in blood pressure, loss of weight, nervous symptoms, and ocular changes—may coexist with a B.M.R. within the accepted upper limit of plus 15 per cent. The possibility here arises that the figures obtained, while within the average normal range, may yet be high for the individuals concerned, and would fall with iodine administration or after operation. S. Gordon and R. R. Graham[1] report 71 cases of toxic goitre with normal metabolic rates—those with nodular goitre predominating, as might be expected. Partial bilateral thyroidectomy was done in 65 (incidentally without a death) and cure or improvement was noted in about 90 per cent. of these; but the average drop in the metabolism was only 2 per cent. in the diffuse goitres and 5 per cent. in the nodular. These figures are robbed of some significance, since the times elapsing between operation and the tests are not given, and more details of particular cases would have been welcome. There is little doubt, however, that the clinical picture to which attention is drawn—namely, thyrotoxicosis associated with a metabolism within the normal and little or not at all lowered by thyroidectomy—is not very unusual. It is one that seems to call for further study.

HEALTH OF THE ROYAL NAVY FOR 1933

The first report by the new Medical Director of the Navy, Surgeon Rear-Admiral R. W. B. Hall (152 pages, 2*s.* 6*d.*), contains important changes in nomenclature. The terms "insanity" and "catarrh" have been abolished, a heading for "diseases of the breast" has been added, and "scabies" will in future be included among "diseases caused by metazoan parasites." The total force in 1933 was 83,125, the number sick was 503 per 1000, 10·02 were invalided, and 2·24 died; in actual numbers 42 died from injuries, 18 from tubercle, 17 by malignant growths, 9 from pneumonia, and 12 from other respiratory diseases. Dysentery occurred in *Norfolk* during January at Trinidad, and was cured with magnesium sulphate, grs. 60, in 2 teaspoonsful of water every hour till pain had disappeared, and stovarsol afterwards, grs. 2 twice a day, to kill the cysts. Of typhoid there were 3 cases with 1 death; of 19 paratyphoid cases none was fatal. Of influenza there were 3770 cases, of which 1 died in Edinburgh. Of malaria 210 cases are reported with 2 deaths; one of these had an attack in December from which he was thought to have recovered; but in January, whilst playing football, he was struck in the abdomen by the ball, appeared little inconvenienced at the time, but died a few hours later with a ruptured spleen. It is well to use red electric light bulbs in malarial regions; they attract mosquitoes much less than the white ones. A stoker under treatment for gonorrhœa developed a gonorrhœal septicæmia and died suddenly on the nineteenth day. A marine during field training was bitten, it is supposed by an adder, on Dartmoor; he was seriously ill with shock and brawny swelling, but after vigorous treatment, strychnine and antivenene intravenously, he went back to duty in eight days. Bathing at Malta on August 30th, a man grazed his nose on the bottom. The abrasions became septic and when he reached the Red Sea he had lockjaw; there were only 12,000 units of antitetanus serum on board, and his ship was sent at once to Aden, where he died on the next afternoon of tetanus. Of tuberculosis 176 cases came to notice as against 206 in 1932. Venereal diseases were fewer than in 1932, even allowing for cases of chancroid, which are now scheduled as diseases of the generative system. During an operation on a case of perforated duodenal abscess at Malta, a small black object found was identified as an Italian bee; it was suggested that it might have been swallowed with honey and have given rise to the abscess. Carbon tetrachloride, in use for fire extinguishers, has given rise to alarming cases of anuria at a naval hospital.

ACUTE MECHANICAL OBSTRUCTION

In spite of indefatigable attempts by laboratory workers to solve the problem of intestinal obstruction, this form of abdominal crisis remains as much an enigma as it was half a century ago. A recent clinical study of acute mechanical obstruction by Amos Fey and W. R. Cubbins[1] does, however, clarify the situation as it exists to-day. They rightly say that "any observer who has waded through the mass of literature on experimental work which has appeared during the last decade will agree with the authors that certainly most of it has been fruitless and serves only to confuse us in our efforts to lessen mortality." In their review of 241 cases of mechanical obstruction (excluding external herniæ), in which there was a mortality of 42 per cent., they point out that the death-rate has not fallen in the last thirty years. Their own emphasis is chiefly laid on early relief of the obstruction—for which of course early diagnosis is essential. Pain and vomiting remain the most important and constant symptoms. The test of an enema must be very carefully done to avoid all chance of mistake, and it should be recognised that some result from an enema is no contra-indication to surgery unless the patient is relieved subjectively. Physical signs, as most authorities have shown, are not very striking. Though distension usually increases with the duration of the obstruction, there were in this series some cases of complete obstruction with gangrene but with little distension. On the other hand, tenderness on palpation may be present more often than one would gather from surgical text-books. An abdominal finding of great importance is increased peristaltic activity revealed by auscultation; the violent contractions of the bowel are an attempt to force the bowel contents onward, and when they cease as a result of exhaustion the outlook becomes serious. Cessation of peristalsis nearly always occurs with the onset of gangrene and usually precedes it. Writing on treatment Fey and Cubbins comment on the numerous recommendations of enterostomy that have appeared during the last fifteen years; one is led to believe, they say, that enterostomy is a definite and distinct life-saving procedure, for it is often advised without mention of any attempt to relieve the obstruction. Their own records do not support this contention; the mortality of enterostomy is high, and it does not prevent gangrene unless the mechanical obstruction be relieved at the same time. Justification is provided also for another view, long held by many English surgeons, but not generally accepted—namely, that acute intestinal obstruction with gangrene is best treated by resection; exteriorisation and gun-barrel fistula, so attractive as emergency measures, have a higher mortality. Important factors in the high death-rate from enterostomy are infection of the abdominal wall and peritoneum, digestion of the abdominal parietes, exhaustion and starvation from loss of intestinal contents, and the secondary operations necessary for closure. Far too many surgeons seem to accept it as the operation of choice when obstruction has resulted in gangrene, the suggestion being that the patients are too ill to stand anything more drastic. This paper points out the error and danger of such an assumption.

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[1] Canad. Med. Assoc Jour., February, 1935, p. 162.

[1] Surg., Gyn., and Obst., March, 1935, p. 738.

SIR JAMES MICHELLI

WITH the death of Sir James Michelli on April 3rd there passes a figure well known to the medical profession. For forty years, from 1887 to 1927, Michelli served as secretary to the Seamen's Hospital Society—a record probably unique in the annals of hospital administration—and he came to Greenwich with six years' experience as secretary of St. Mary's Hospital, Paddington. Since 1927 as hon. treasurer he had retained his association with the great charity which he served so long and faithfully. When Michelli joined the Seamen's Hospital Society in 1887 its resources were at a low ebb, and the establishment consisted solely of the "Dreadnought" at Greenwich, already a time-worn institution and badly in need of repair. Under his guidance and largely owing to his inspiration, the work of the society increased to such an extent that at the time of his death it was responsible for the management and maintenance of four hospitals, a sanatorium at Bramshott, and a convalescent home at Cudham. This expansion entailed a corresponding increase of income from subscriptions, and it is said that the assets of the society increased tenfold during Michelli's administration. But his chief and most lasting work was surely the institution of tropical medicine as a factor in the medical education of this country, and this came about as the result of his close association with Sir Patrick Manson and Mr. Joseph Chamberlain. The Royal Albert Dock Hospital was built in 1887 and there, in the early nineties, he came under the influence of Manson and had the sagacity to discern the importance of his researches into malaria; and it was to Michelli that Manson first expounded his plan for the institution of a school of tropical medicine in London, with the result and owing to his energy that the school opened its doors to students in 1899. From that time Michelli was the pivot in the development of tropical medicine. He was responsible for the raising of the Chamberlain and the Milner Funds, making together a quarter of a million sterling, to further the aims of this specialty in London. And he was instrumental in the final inauguration of the new school in 1924. Born in Cork, where his father was Austrian consul, Michelli possessed in high degree the lovable qualities of the country of his birth. He was a good mixer, and he shared with the late Lord Knutsford the distinction of being the "Prince of Beggars." He continued indeed to beg so persistently and so firmly that few, if any, could be found to resist him. He was a familiar figure at almost every public function, and was always to be found dodging in and out of Government departments and other places where he thought he could obtain sympathy and material support for the objects which he had so dearly at heart. The welfare of seamen was his hobby and his sole aim.

A CHRONICLE OF CHILD WELFARE

THE student of child welfare should be grateful to Dr. McCleary [1] for having sifted so carefully such an enormous volume of facts and theories, and presented them in compassable form. Some dozen of the 14 chapters in his book are mainly historical, and certain of the records are of peculiar interest. This is, we believe, the first time that any writer has taken the trouble to select from the original reports in the *Times* the salient points in the history of Margaret Waters, the notorious baby-farmer who, in 1870, was tried and executed for murder of the infants committed to her charge. This case created a great sensation, and, together with a similar one relating to a woman named Mary Hall, doubtless had considerable influence in securing support for the efforts of Dr. J. B. Curgenven and others which eventually led to the passing of the first Infant Life Protection Act in 1872. A chapter bearing the prosaic title "How the State Recognition of Midwives was secured" sets out a story full of romance and heroism. It describes the efforts of such men as Ambroise Paré, the Chamberlens, and others who gradually lifted the practice of obstetrics from its despised estate. In the nineteenth century, when puerperal fever was still taking a desperate toll of mothers' lives, other pioneers arose who refused to be satisfied with attributing a maternal mortality which sometimes reached 200 per 1000 live births to such vague causes as "epidemic influence" or "atmospheric conditions." The author tells how Oliver Wendell Holmes in America and Ignaz Semmelweis in Vienna faced the embittered attacks of unenlightened contemporaries for their courage in publishing evidence of the communicable nature of puerperal fever. Holmes considered the doing of this "humble office" sufficient cause "to be thankful that I have lived, though nothing else good should ever come of my life." Although Semmelweis was less fitted than Holmes to contend with the onslaughts of his opponents, and died in a mental hospital, he demonstrated, by his own carefully controlled experiments, the nature of puerperal fever, and rightly merits the place which Dr. McCleary accords him as "one of the great figures in the history of medicine."

HOMICIDE

A RECENT study of homicide statistics, conducted by two officials of the Metropolitan Life Insurance Company of New York, explores the unenviable record of the United States as the only important country to show more homicides in post-war than in pre-war years. The authors have considered questions of sex, age and geography, seasons, occupations and economic cycles. Few solid conclusions emerge. The motives of murder are manifold and the personal histories of the criminals and their victims are seldom fully known. Two points are clear. First, a remarkable number of American homicides is due to the use of firearms. The proportion of firearm homicides to the general total in the U.S.A. is roughly two-thirds; in England and Wales where, apart from any difference in national habits, there are statutory restrictions on the purchase and possession of firearms, the corresponding percentage is as low as 13. Secondly, the American statistics confirm the belief that the murderer is not usually a member of the criminal classes. Evidence of their previous careers may be inadequate, but it is stated that, roughly, 75 per cent. of the men and 90 per cent. of the women charged with murder in the U.S.A. were first offenders. Homicide indeed is largely unpremeditated.

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[1] The Maternity and Child Welfare Movement. By G. F. McCleary, M.D., D.P.H. London: P. S. King and Son, Ltd. 1935. Pp. 227. 7s. 6d.

Similar investigation of the incidence of murder is possible in England. We have the excellent Criminal Statistics annually published by the Home Office, the copious evidence given before the Select Committee on Capital Punishment in 1930, and the Command Paper (No. 1787 of 1922) which, at a time when the public was concerned at the number of unsolved murder mysteries, gave a reassuring account based on the comparative figures for the two-year periods immediately before and after the war. From these sources we can learn many facts—that murder, for instance, is almost exclusively a masculine offence, or that a multiple murderer often commits suicide. We have our problems also. Are we satisfied that capital punishment is a deterrent, that mental instability is sufficiently understood in criminal courts, that indiscriminate publicity is desirable for murder trials, and that no better classification of the degrees of homicide can be evolved?

WHAT IS ADDICTION?

ADDRESSING the Society for the Study of Inebriety last Tuesday Dr. W. E. Adams pointed out that the word "addiction," as applied to drugs, is of comparatively recent origin. Its implication is that the addict is bound to a master, and it is thus peculiarly applicable to the state induced by habitual use of such drugs as morphine, heroin, and cocaine. Once a man admits one of these into his life it, and not he, will be the master. This is one prime characteristic of addiction, said Dr. Adams; another is connected with the motive which prompts resort to drug-taking. Generally speaking, and in western countries, this motive is the need for some agent which will temper the wind of reality to the psychically shorn lamb; for the victims of addiction are, almost always, not quite normal psychically. A third feature is the development of what is known as "craving"—an urgent need for the continuance of the drug. On its being withheld there is a distressing train of symptoms, both physical and mental. Also, in cases of true addiction, we have a "tolerance" or a gradual accustoming of the tissues whereby the seasoned addict is enabled safely to take doses of a magnitude that earlier would have speedily ended his life. Lastly the masterful character of the drug is shown by any almost uncontrollable tendency to revert again to it after apparent cure. Thus addiction, said Dr. Adams, may be defined as a state of bondage to a masterful drug usually, but not always, of the narcotic class, and manifested by craving, tolerance, intense discomfort of a specialised character on withdrawal of the drug, and a tendency to relapse. Its origin lies in a defect of the personality which may be of varied kind, but is most commonly of the nature of an inability to cope with reality. These criteria may usefully be applied to certain doubtful forms of addiction—e.g., tobacco-smoking and tea-drinking. Neither tea nor tobacco has the dominating character of opium, morphine, or cocaine, and the like; but if the personality be weak they may be powerful by comparison, and in certain circumstances either of them may produce all the stigmata of a true addiction.

COMMON SALT IN ADDISON'S DISEASE

WE have already reviewed the work upon which the use of sodium chloride in Addison's disease depends, and also some records of therapeutic success.[1] Conclusive evidence on the relative value of sodium chloride and cortical extract, and on the relative importance of the sodium and chlorine ions and their relationship to other mineral elements is still awaited. M. A. Blankenhorn and J. M. Hayman[2] have recently recorded the successful treatment of a patient in crisis with intravenous sodium chloride when cortical extract alone had apparently failed. In the subacute phases of the disease, salt by mouth was adequate to maintain a relatively good condition; and for a period of 17 days the daily dose of 12 g. NaCl was replaced by a mixture of Na_2SO_4, Na_3PO_4, and Na_2CO_3, in amounts that contained an equal quantity of sodium. Several interesting questions arise from this communication. Although, according to A. M. Snell,[3] cortical extract alone may be effective in Addisonian crisis, most observers, notably Rowntree and his collaborators, and Levy Simpson, have urged the additional use of intravenous saline, this being a more direct way of remedying dehydration and blood concentration. To rely only on fluids and salt in crisis might jeopardise the life of the patient unnecessarily when a potent cortical extract is available. In the treatment of the more chronic phase of the disease, it is yet to be determined whether the use of salt alone, in preference to potent cortical extract, has anything to recommend it other than its great cheapness and the fact that it is effective when given by the mouth; this is not to minimise the enormous importance in clinical medicine of these two considerations. The patient described by Blankenhorn and Hayman was treated for the greater part of the time with salt only, and died after five months. R. F. Loeb and D. W. Atchley stated[4] that "salt-treated patients retain most of their pigmentation, they are sensitive to cold and tire more easily than normal individuals, and the systolic blood pressure, while definitely above shock levels, tends to be low, as does the concentration of sugar in the blood;" and that salt feeding will not maintain life for more than three weeks in completely adrenalectomised animals. Loeb emphasised the loss of sodium as an essential factor in adrenal insufficiency, and the fact that Blankenhorn and Hayman were able to replace the chloride by less nauseating salts of sodium is both of theoretical and practical interest.

In considering whether the low level of serum sodium can be correlated with the symptomatology of Addison's disease, other mineral elements come into consideration. Loeb and Atchley found that "the potassium content of the blood which is elevated to varying degrees in acute insufficiency of the adrenal glands returns to normal levels with salt administration." Urechia, Dragomir, and Retezeanu have found that cortical extract reduces the high concentration of blood potassium in a patient with Addison's disease to normal levels.[5] They also suggest that the high toxicity of ionisable potassium and the selective action of this poison on the muscles, explain very well the asthenia associated with its retention. It would appear that there is still much to be learnt about mineral and water balance in adrenal insufficiency, and the inadvisability of limiting such investigations to chloride or sodium is clear.

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[1] THE LANCET, 1934, i., 137; ibid., 1934, ii., 883.

[2] Amer. Jour. Med. Sci., March, 1935, p. 419.

[3] Internat. Clin., 1934, iii., 46.

[4] Med. Clinics of North America, 1934, xvii., 1317.

[5] Bull. et mém. soc. méd. hôp. de Paris, March 4th, 1935, p. 700.

SNAKES AFTER DINNER

MEMBERS of the Hunterian Society, assembled for their annual general meeting last Monday at Simpson's Restaurant, Cheapside, were looking forward to an after-dinner lecture by Lieut.-Colonel R. H. Elliot, F.R.C.S., on snakes and their bites. At the last moment a sudden indisposition prevented Colonel Elliot from being present and Mr. Mortimer Woolf, the society's librarian, was faced with the unexpected task of demonstrating the slides and cinematograph film that were to have accompanied the lecture. With the expert assistance of Dr. Burgess Barnett, curator of reptiles at the London Zoo, he at least made the audience aware of the fascinating nature of the lecture they had missed. Slides were shown illustrating the mechanism of snake-bite, the evolutionary development of the poison-fangs, and the methods used for extracting the venom from snakes for the production of anti-snake bite sera; but in the absence of the lecturer even more interest attached to the remarkable film taken by Captain Newnham Deane at the snake farm of the Butantan Antivenine Institute, Brazil. There, in a wooded enclosure, fenced by a snake-proof wall and moat, were to be seen hundreds of snakes awaiting "milking." Local farmers are encouraged to send all snakes they may encounter to the institute, with the result that a useful species that feeds on the dreaded fer-de-lance was much in evidence in the film; it was shown first eating and then being compelled to regurgitate its prey which seemed little the worse for the experience. Walking unconcernedly among them an attendant picked the snakes from the ground or raked them from trees to extract their venom into a Petri's dish—venom which is valued at £60 an ounce. The cordial reception given to the film, and the expressions of gratitude to Dr. Barnett, left no doubt of the success of the valiant efforts made to save the evening from disaster.

SERUM TREATMENT OF CEREBRO-SPINAL FEVER

SKIN reactions following the intradermal inoculation of filtrates of fifteen-day broth cultures of meningococci were first described by Erlich, Popowski, and Przesmycki in 1925.[1] Six years later Ferry, Norton, and Steele [2] confirmed this observation by obtaining similar reactions in human beings following the intradermal inoculation of filtrates of four to six days broth cultures of meningococci of all types. From further investigation Ferry [3] [4] has since concluded that filtrates of broth cultures of meningococci contain a diffusible toxin, and that antitoxic sera may be elaborated for all types of meningococci by the inoculation of horses with the respective filtrates. A polyvalent antitoxic serum obtained from Ferry's filtrates has now been provided for therapeutic purposes and the paper by Dr. Banks in our present issue contains a record of the first clinical trial of this serum in England. As Banks points out, the number of cases treated with this antitoxic serum in England (25 in all, with 7 deaths) is too few to enable any conclusions to be drawn about the relative therapeutic merits of the antitoxic serum and the "antibacterial" serum now in general use. The results reported by American clinicians certainly seem to show that the antitoxic serum is the more active. Thus Hoyne,[5] of the Cook County Hospital, Chicago, reports that death occurred in 20 out of 85 cases of cerebro-spinal fever treated with polyvalent meningococcal antitoxic serum, whereas 96 died out of 211 treated with the usual polyvalent antibacterial serum. It is important to note, however, that in 40 of the cases quoted by Hoyne bacteriological diagnosis was not made. On the whole the time has probably not come for the general adoption of the antitoxic serum as a method of treatment in this country. More controlled clinical research is required, and owing to the fortunately low incidence of the disease in England this will necessarily take some time.

From the bacteriologist's point of view the position is equally uncertain. In the first place, it is not yet clear whether the filtrates of meningococcal broth cultures contain anything other than the products of the very rapid autolysis of the organism. Substances poisonous to guinea-pigs on subdural inoculation undoubtedly occur in the filtrates, but they also occur in filtrates of other neisseriæ grown under the same conditions. Secondly, the appearance of the poisonous substances in the broth cultures is paralleled by the development of products of bacterial destruction such as precipitinogens. Again, protection experiments on animals with antitoxic sera provided by Ferry and with antitoxic sera made from English strains of meningococci have not yet confirmed the happy results obtained by the American workers. Finally, with regard to the therapeutic antitoxic serum itself, it must be pointed out that the system of arbitrary units adopted by its manufacturers is one which is not acceptable to English bacteriologists, and practitioners would do well to view critically statements concerning units which are not admitted by the Standards authorities of this country.

WE regret to announce the death from pneumonia on April 7th of Dr. John Braxton Hicks, M.R.C.P., at the age of 50. Dr. Braxton Hicks was pathologist in charge of the L.C.C. group laboratory at Lambeth.

Summer Time, which has already been in force a fortnight in France, will commence in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday morning next, April 14th, at 2 A.M., when the hands of timepieces should be advanced one hour. It will end on Sunday, Oct. 6th.

A SCHOLARSHIP of £200, open only to the sons of medical men, and tenable at St. Bartholomew's Hospital Medical College, will be offered for competition on May 27th. The scholarship will be confined to candidates who have passed London Matriculation, or obtained exemption from it. The examination will be conducted in (1) English; (2) French or German; (3) mathematics; (4) two other selected subjects, and the standard will be similar to that of Matriculation. Intending candidates should apply for further information about this Helen Cave Memorial Scholarship from the Dean of the Medical College, St. Bartholomew's Hospital, London, E.C.1, before May 1st.

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[1] Erlich, M., Popowski, St., and Przesmycki: *Compt. rend. Soc de biol.*, 1925, xciii., 943.

[2] Ferry, N. S., Norton, J., and Steele, A.: Jour. of Immunol., 1931, xxi., 293.

[3] Ferry, N. S.: Ibid., 1932, xxiii., 315 and 325.

[4] Ferry, N. S.: Ibid., 1934, xvi., 133 and 143.

[5] Hoyne, A. L.: Jour. Amer. Med. Assoc., March 23rd, 1935, p. 980.

MANSFIELD HOSPITAL.—An appeal for £10,000 is being launched by this hospital in an endeavour to wipe off its overdraft and eliminate heavy interest charges.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XLVII.—PROGNOSIS IN TOXIC GOITRE

If the natural course of a disease is known, and also the extent to which this can be altered by treatment, the prognosis can be stated with confidence, due consideration being given to the variations in constitution, temperament, and environment that are found in patients. In toxic goitre the course of the disease is extremely variable, and the personal and environmental conditions of the individual patient affect the course and possibilities of treatment to such an extent that the principles that guide the formulation of a prognosis cannot be stated briefly.

NATURAL COURSE OF THE DISEASE

Although the cause of the disease is unknown, the onset and the relapses are so frequently associated with certain events such as acute infections, especially acute tonsillitis, and mental strain and worries, that these must be regarded as ætiological factors. In a small number of patients in whom the onset is associated with a definite factor of this nature the disease may be of brief duration and after a course lasting a few months end in complete recovery. This short course appears to be related to the cessation or removal of a definite causal factor. The complete resolution of an acute tonsillitis, the enucleation of infected tonsils, and the satisfactory solution of a worrying financial situation or love affair may be quoted as examples. The presence of a definite ætiological factor and the possibility of removing this factor thus favours a short course and good recovery.

The more usual course is a long one continuing with remissions and relapses over a period of many years, and this must be expected if rapid recovery does not occur in a few months. Once the disease is clearly established complete recovery is improbable. A remission may last for many months or even years, during which the symptoms and signs of the disease may be barely perceptible, but a relapse may occur at any time and although such a relapse may be mild it may, on the other hand, be so severe as to cause death. Events of ordinary life, which scarcely affect the health of normal people, disturb these patients profoundly. If they can be guarded and their lives steered through calm waters they may continue for many years with moderately impaired efficiency. Sooner or later, however, the strain on their organs and tissues causes more definite disturbances of function, and a common sequel is auricular fibrillation with congestive heart failure that threatens life. Less often it is the mental faculties that give way. If a life of constant strain or repeated worries is inevitable the disease is likely to be more severe, and the onset of circulatory or mental troubles earlier.

In young women who have for many years suffered from vague ill-health with an appearance of anæmia, with constipation, various visceral neuroses, and lack of energy, there may arise at some point in their history symptoms of toxic goitre: tachycardia, tremors, nervousness, and a slight enlargement of the thyroid gland. The toxic goitre in these patients is usually mild and continues for many years, but it is only one factor in the disability and, as a rule, not the most potent factor. From the prognostic aspect this is an important group to recognise, for the results of treatment directed to the thyroid gland are disappointing and such treatment alone cannot be expected greatly to improve efficiency.

EFFECT OF TREATMENT ON THE COURSE OF THE DISEASE

There are two main lines of treatment whereby the course may be affected: (*a*) rest and removal of sources of infection or of worries and mental strain, and (*b*) diminishing the amount of functioning thyroid gland tissue.

(*a*) As soon as the diagnosis is made, treatment by rest must be instituted, and this should be carried out in an environment other than that associated with the onset. The accessory factors such as infected tonsils, teeth, and sinuses, and mental stresses, especially financial, family, and marital, must be weighed and dealt with if possible. If the disease is of short duration previous to the commencement of treatment, and a rapid improvement takes place, it is possible that recovery will be complete enough for a return to normal life and activities. If the disease has already been present for some years or if the improvement is not so satisfactory a chronic course of remissions, relapses, and ill-health is probable, and a life of even moderate efficiency and happiness is only possible under placid and protected conditions. In addition there will be an ever-present danger of a serious relapse that threatens life. The presence of a nodular thyroid gland is evidence of a repeated or prolonged disturbance of the functions of the gland and points to the probability of incomplete recovery and continuing relapses.

(*b*) Removal or destruction of a sufficient amount of the functioning tissue of the thyroid gland by means of surgical operation or irradiation will prevent the occurrence of the severer grades of intoxication, so that the danger of a relapse that threatens life is thereby removed. To effect this by irradiation takes several months at least and the results are uncertain. In the more severe cases the possible onset of dangerous relapses and complications, circulatory or mental, during these months of treatment must be considered. On the other hand, there is a danger to life as an immediate result of the operation of thyroidectomy. In the hands of surgeons experienced in operations on the thyroid gland this danger is negligible in uncomplicated cases, but in the hands of those who are not especially expert or experienced the danger is a real one and must be carefully weighed. Whenever possible operation should be delayed until a remission has set in. Careful selection of the most favourable time for operating and the administration of iodine cannot eliminate entirely this immediate danger.

Adequate treatment by surgery or irradiation can also restore the efficiency of the patient. Following sub-total thyroidectomy a return to normal activities can be expected at the end of three or four months. In many cases recovery is complete and all symptoms disappear, but mostly there remains some slight degree of excessive or of lowered activity of the gland, so that it is usually advisable for such a patient to avoid the more strenuous types of mental and physical exertion; but for all ordinary purposes the outlook for functional efficiency is good. To some extent it will depend on the possibility of avoiding the accessory ætiological factors already mentioned; an unhappy marriage, for example, will affect the prognosis adversely. From a review of the results of treatment after ten to fifteen years, the patients in whom a slight degree of hyperactivity persists appear to be happier and more efficient than those in whom a mild hypothyroidism has developed;

the administration of thyroid gland cannot be relied upon to compensate accurately for the deficiency.

In the type of case referred to above, in which the thyroid disturbance is but part of a general condition of ill-health, often of many years' duration, the general improvement resulting from treatment for the thyroid condition, including surgical treatment, is disappointing, and many such patients are more unhappy and inefficient after operative treatment than before. The prognosis in these cases will necessarily depend upon the relative importance of the thyroid in the disability of the patient. Even after sub-total thyroidectomy relapses requiring further treatment by operation or irradiation do occur, but these must be regarded as exceptional.

Use of iodine.—The reintroduction of the use of iodine in the treatment of toxic goitre has affected the the prognosis profoundly in that it has rendered the operation of thyroidectomy much less dangerous to life. It is probable also that by its aid the patient's readjustment following operation is easier and his ultimate efficiency increased. The value of iodine in diminishing the severity of relapses and in aiding in the establishment of remissions is also undoubted, but it probably has no effect on the ultimate course of the disease other than to diminish its severity, and it is doubtful if operative treatment can be avoided by its administration or if complete recovery can ever be accounted to it. If the disease is increasing in severity the remission that results from iodine is temporary, but if iodine treatment coincides with a natural remission the effect is prolonged. If operative treatment must be carried out before a natural remission sets in, the temporary iodine remission is the safest time in which to operate.

PROGNOSIS IN SPECIAL CIRCUMSTANCES

Circulatory disturbances.—Extrasystoles and auricular fibrillation, at first paroxysmal but later established, are commonly found in elderly patients with toxic goitre, even in quite mild grades of hyperthyroidism if the disease is of long standing; they occur also in younger subjects if the disease is severe. These disturbances of cardiac rhythm are a strong indication for treatment by thyroidectomy, and they and their effects upon the circulation disappear spontaneously in most cases with the improvement in the toxic goitre that follows successful treatment. In some patients the administration of quinidine is necessary before normal rhythm is restored. In a small number of cases the auricular fibrillation persists in spite of all treatment, and in these the ventricular rate must be controlled with digitalis; in many of these some other form of heart disease is present. A raised blood pressure is met with in toxic goitre, especially in elderly patients, which disappears or becomes less pronounced after recovery. In others it persists even after successful treatment. This condition should be regarded as an indication for diminishing the amount of functioning gland tissue so that the heart may be relieved as much as possible from extra and remediable stress.

Mental disturbances.—Although more frequent in middle-aged and elderly patients, serious disturbances may be encountered in young girls with severe hyperthyroidism. Prognosis must depend upon a careful evaluation of hereditary and familial factors, but in most instances it clears up following thyroidectomy, though there may be a period of greatly increased severity for some months following the operation, a period of great distress and anxiety to the relatives. In general, such disturbances should be regarded as an indication for operation rather than the reverse, but much care and consideration must be exercised before deciding on this line of treatment.

Glycosuria.—Disturbances of carbohydrate metabolism with diminished sugar tolerance and glycosuria are not uncommon, and may be of varying degrees independent of the severity of the thyroid disturbance. They are usually mild and disappear with the subsidence of the thyroid disease. They may persist though diminished in severity, and require continuous treatment as for diabetes mellitus, but are seldom progressive.

Amenorrhœa.—During the course of toxic goitre amenorrhœa is commonly found and pregnancy seldom occurs. Following recovery menstruation is re-established and successful pregnancies are frequently met with.

Proptosis.—Of all the symptoms of toxic goitre exophthalmos is the most persistent. Although a considerable diminution in the degree of proptosis slowly follows successful treatment for the toxic goitre and sometimes it disappears completely, some degree may persist indefinitely, and it is usual to recognise a brightness of the eyes or slight staring for many years.

Toxic goitre in childhood.—In children the disease may follow a stormy course and prove fatal unless treatment by thyroidectomy is carried out before the operative risks are too great. The principles of prognosis are essentially the same as in adults, but in the milder cases treatment by rest and general measures may be persisted in for a longer period, for the probable course of the disease can be foreseen with even less confidence. Moreover, since profound changes take place in the glands of internal secretion at adolescence, the effects of drastic treatment of the thyroid gland before this period upon health, character, and temperament cannot be gauged. These patients require to be under careful observation for many years, and such measures as ligation of arteries and treatment by X rays have proved of value in guiding them to adult life and health.

Pregnancy.—During pregnancy the disease usually improves, but there is not infrequently a relapse in the puerperium. A relapse is usual if the pregnancy is terminated artificially, and may then be severe. It is better to carry the pregnancy through to term. If the severity of the toxic goitre is endangering the life of the mother, partial thyroidectomy should be performed and the pregnancy allowed to continue.

SUMMARY

Toxic goitre is usually a chronic disease that may endanger life, and seriously lowers efficiency. The danger to life can be removed by diminishing the amount of functioning thyroid gland tissue by means of surgical operation or by irradiation. The most efficient method of doing this at present is by surgical operation. This operation may be dangerous to life, and the mortality is negligible only in the hands of surgeons especially skilled and experienced in operations on the thyroid gland.

Efficiency is frequently restored by treatment, but some slight disability commonly persists. Patients with a mild degree of persisting hyperthyroidism are more happy and efficient than those with hypothyroidism.

The result of treatment directed to the thyroid disturbance will depend on the degree to which the thyroid disturbance accounts for the disability of the patient; toxic goitre frequently arises in the course of chronic ill-health and is but one factor in the disability.

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SPECIAL ARTICLES

MINOR EPIDEMICS OF "INFLUENZA"

(EPIDEMIC CATARRH)

A CLINICAL STUDY OF NINE SEASONS, 1924–33

By G. M. Wauchope, M.D., M.R.C.P. Lond.

ASSISTANT PHYSICIAN TO THE NEW SUSSEX HOSPITAL, BRIGHTON

It has been said that "no one has yet succeeded in achieving either a satisfactory definition of what is meant by influenza, or a description, far less a regulation, of the usage of the word."[1] Epidemiologists are not agreed upon which of the prevailing illnesses of the past were influenza; purists decline to accept any epidemic unless a recognised causative organism (such as Pfeiffer's bacillus) is isolated; clinicians consider only the great pandemics as the true disease. The general practitioner, however, calls all the catarrhal fevers with which he has to deal in the winter months "influenza."

There are four criteria by which this "influenza" or epidemic catarrh is distinguished.

(1) The illness is acute and catarrhal, affecting the mucous membranes of the respiratory tract and less frequently of the digestive tract.

(2) There are pronounced symptoms but the physical signs are negligible.

(3) There is almost always a sudden rise of temperature. Apyrexial cases do occur but are rare and are not diagnosed as influenza unless they are associated with ordinary febrile cases.[2]

(4) Similar symptoms are shown by a large number of people.

These conditions are fulfilled by the minor epidemics or "prevalences" which are seen almost annually. They have been described in closed communities such as schools and ships by Dukes, Simey, and Dudley, whose results were summarised by Glover in 1932 from the epidemiological aspect.[3] General practice affords an opportunity to study them clinically among the people at large, and it is remarkable to find that although the circumstances of the patients vary widely yet each season's illness has its own individual peculiarities.

Dudley noted that in one epidemic, batches of patients from the same ship presented the same clinical picture, which differed from that in other ships, and that the boys of Greenwich School had the same type of epidemic in four different years although among the population outside there was pleomorphism.[4] In this series, however, the characteristic features seemed to follow the year.

The Nine Epidemics

Nine winters are reviewed, the last being that of 1932–33; the winter of 1933–34 is not included because the cases of feverish catarrh were so few and so scattered that a diagnosis of "influenza" was not made.

The practice in which the 584 cases occurred is in a large seaside town and the majority of the patients were women and children; all ages up to 80 are included but a large proportion (30·4 per cent.) were children under 14 years of age.

INCIDENCE

The incidence of the illness for each winter has been set out in Charts 1–9. They give a rough[*] idea of the relative proportions of the epidemics and from them certain broad generalisations can be made.

(1) There were three types of chart: the first with a sharp peak, the second with a broad irregular mountain, and the third with a low plateau. In the years with the first two types of chart the number of cases was about the same from year to year, averaging 86, but in the plateau years there were only about a quarter that number (average 22).

The sharp increase in the cases to a maximum and the slower fall is characteristic of epidemic influenza,[5] and in the years with this type of chart there were extensive epidemics in Europe and North America as recorded by D. and R. Thomson.[5] The more gradual increase extended over several weeks and giving rise to charts of the second type occurred locally in milder epidemics, but in these years also there were widespread epidemics except in 1931–32 when the local chart shows the least "peak" of any. On the other hand, in the years with the local "plateau"-shaped chart there was no recorded influenza in Europe or America and the illness of these years might more properly be called "sporadic catarrh"; they have been included because individual cases presented symptoms and evolution similar to the "influenza" of the other epidemics, and even included cases without respiratory catarrh.

(2) In each of the years under review there was a small outcrop of cases in the autumn, then a clear month, generally November, but on three occasions December or January, followed by a great increase in the number of cases between the end of January and the end of February. One week often accounted for a high peak of incidence.

(3) A third point which emerges from the charts is the similarity of the time distribution in each succeeding year. September and May were the limits, and the peak, when there was one, fell within the four weeks between the end of the third week in January and the end of the third week in February.

CLINICAL DESCRIPTION

Analysis of the notes taken at the bedside reveals that there were three distinct *types of the illness* which occurred either alone or in combination one with another: (*a*) respiratory, (*b*) alimentary, and (*c*) neuromuscular.

(*a*) *Respiratory catarrh* was the prevailing disorder in over 80 per cent. of the cases in each year under review, the average being 88 per cent.[†] The symptoms in uncomplicated cases were those of a severe cold in the head, sneezing, suffused eyes, and incessant mucoid nasal discharge which reddened and excoriated the nostrils and upper lip. The throat was sore in about 20 per cent. of all cases, but the most characteristic feature was a hard barking cough persisting day and night in over 50 per cent. of the cases. Paroxysmal sneezing occurred in the epidemics where nasal catarrh was marked, and epistaxis in the same type of illness. Injection of the pharynx was the only objective sign except for occasional scattered rhonchi in the lungs.

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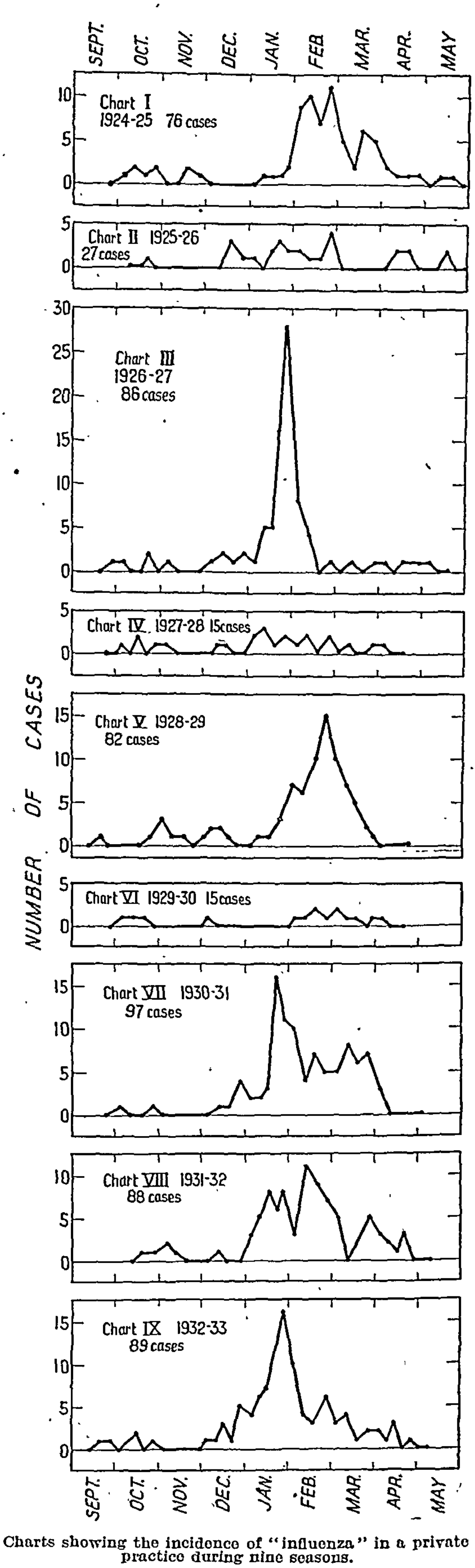
[*] For instance, Chart 3, 1926–27, shows an artificially sudden fall due to the illness of both partners on the same day (Feb. 5th); cases were transferred and notes lost. The growth of the practice affords another fallacy so that the 89 cases of 1932–33 are not nearly so high a proportion of the cases seen during the year as the 86 cases of 1926–27.

[†] This comprises all cases with respiratory symptoms, whether alone or in association with the other types.



Charts showing the incidence of "influenza" in a private practice during nine seasons.

The cough was probably due to extension of the pharyngitis to the trachea. There were 68 cases without respiratory catarrh and these were divided almost equally between the alimentary (31, or 5·5 per cent. of the whole) and the neuromuscular (37, or 6·5 per cent.) types of the illness.

(*b*) In the *alimentary type* the symptoms were diarrhœa and vomiting, intense nausea, flatulence and epigastric discomfort, and, in a few cases, severe abdominal pain (9 out of 31 pure alimentary cases). There was sometimes a close imitation of an acute surgical condition, but it did not give rise to real difficulty in diagnosis since the cases occurred in an epidemic.

98 cases, or 17 per cent. of the total, had alimentary symptoms; of these, 17 combined respiratory and alimentary catarrh, and thus the series differed from Marriott's experience in 1933 at the Middlesex Hospital, where each group was quite distinct.[6]

(*c*) The *neuromuscular* group of symptoms likewise sometimes constituted the whole picture, but in other cases were combined with the respiratory or alimentary type of illness. They were headaches, sometimes described as a "tight band," pains in the limbs, back and bones—especially of the face‡ or a bruised feeling all over—and were often associated with prostration. In combination, this group of symptoms was noted in 152 cases, or 26·6 per cent. of the whole. The "pure" cases were slightly more frequent than the pure alimentary type, although none occurred in two of the years; but two other years, 1924–25 and 1926–27, accounted for more than half the total. They were years of severe illness and the neuromuscular cases were the worst.

Certain symptoms were noted occasionally in all the groups: for instance, shivering in 38 cases, chiefly at the beginning of the illness. Perspiration frequently drenched the patient on the third or fourth day. Giddiness or fainting made a dramatic onset in isolated cases in four of the epidemics, but in 1930–31 was commoner (7 cases). It was not necessarily a bad prognostic sign. Prostration occurred only in the severe epidemics and in severe cases; it will be further discussed in this context.

Fever was usually highest at the onset, or within at most 48 hours, and in uncomplicated cases reached normal on the fourth to the seventh day, the fifth day being the most usual. The maximum observed temperature has been analysed in 499 cases, but in some of these the highest points have probably escaped notice. In 300 (60 per cent.) the highest point was under 101° F., in 199 (32·5 per cent.) between 101° F. and 103° F., and in 37 (7·5 per cent.) over 103° F. In 4 cases under constant observation the temperature was subnormal throughout.

The height of the fever seemed to have no relation to the severity of the illness, but rather to the prevalent type; so that although it was highest in 1926–27 the most severe epidemic, the next highest was in 1927–28, one of the mildest, but having sore-throat as the presenting symptom.

COMPLICATIONS

Complications supervened in 23·2 per cent. of the cases. The most common were bronchitis, pneumonia, otitis media, and myocardial toxæmia.

Bronchitis occurred in every epidemic (64 cases, 10·9 per cent.), and was no doubt due to an extension of the respiratory catarrh from the pharynx and trachea to the bronchial tubes. It increased the length and severity of the illness but never endangered life, and at the mildest was recognised only by the presence of scattered rhonchi for a day or two and a "loosening" of the cough.

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‡ Pain "in the bones" of the face, nose, and forehead was said to be frequent and almost pathognomonic in the epidemic of 1782. (Min. of Health. Rep. on Public Health and Med. Subjects, No. 4, p. vii.)

Pneumonia supervened as a new and serious complication. It appeared in three forms: First, ordinary lobar pneumonia which attacked three young people and one old woman on the fifth to the seventh day after the onset of "influenza." The left base was the site in three, the right in one, and the temperature fell by crisis on or about the seventh day. Two of the cases occurred in one of the mild epidemics, 1925–26. Secondly, broncho-pneumonia followed bronchitis in one case, with recovery; this and the third case of pneumonia were in a severe year—1932–33. Thirdly, toxic influenzal pneumonia occurred in three cases in 1926–27. The picture presented was quite different from that of the lobar pneumonia seen in other years, the physical signs in the lung being a very small part of the whole. Cyanosis was marked and prostration extreme; the pulse was running and feeble, and respiration weak. Two of the patients died, one on the eleventh day of the illness and seventh day of the pneumonia. The other, an old lady who had had repeated colds during the winter, was overwhelmed from the start and died on the fifth day; consolidation of the lung was appreciable on the third day.

The patient who recovered became cyanosed, with rapid pulse and respiration on the fourth day of the illness, the temperature being 102° F. Dullness at the bases, first the right and then the left, was not detected until the seventh day when the temperature had fallen to 99° F. The illness ran the usual course of influenzal pneumonia. The consolidation at the bases did not clear for five weeks and was associated with irregular low pyrexia, rapid pulse, great prostration, and pleuritic pains. Twenty million staphylococci and Friedländer's bacilli in a vaccine made from a sputum of the first patient who died were given on the eighth day with remarkable clinical improvement, and repeated in increasing doses on the eleventh and fourteenth days. The patient was convalescent eight weeks from the onset.

Otitis media was the most common complication after bronchitis (35 cases, 6 per cent.). It was observed in six out of the nine seasons but varied in severity; for instance, in one year (1928–29) suppuration occurred in all the cases, while in 1930–31 all subsided without paracentesis or spontaneous perforation. It took place in cases with respiratory catarrh on the third to the eighth day of the illness. One adult patient, in 1932–33, developed mastoiditis. All except three of the patients were children.

Myocardial weakness only appeared in five of the epidemics, affecting 14 patients; it generally developed after the first week, or well into convalescence, and presented a characteristic clinical picture. The patients lay limp in bed, flat on their backs, and were unwilling to lift a hand or raise their heads. Mental and emotional depression was extreme, and they often feared they would die. They were pale but not cyanosed; the skin was clammy, the tongue furred, and the eyes closed. The heart was generally dilated, the apex being about half an inch outside the mid-clavicular line, the right border just beyond the right edge of the sternum. The sounds were regular, but "woolly" or "tic-tac" and generally rapid, but in two cases there was bradycardia. The systolic blood pressure was very low (90–104 mm. Hg) and the pulse pressure small. The length of time taken to recover was in direct ratio to the age of the patient and ranged from ten months in a woman of 56 to four weeks in a boy of 12.

The following unusual complications were observed:

Cervical adenitis ..	2 cases in children.
Pleurisy	2 cases.
Nephritis	1 case in a child.
Phlebitis	1 case.
Sciatica	1 case.
Jaundice	1 case.
Hæmoptysis	1 case with no physical signs or sequelæ.
Fibrosis of roots of lung	1 case.

The last of these cases deserves brief notice.

In February, 1932, the patient, a woman of 40, suffered *during the second and third weeks of "influenza"* from attacks of breathlessness lasting about half an hour. Moderate and variable pyrexia persisted for two months and crepitations were heard constantly at the roots of the lungs. Radiograms taken seven weeks from the onset showed a condition which appeared to be fibrosis. The sputum was tested repeatedly for tubercle bacilli with negative results and the patient made a complete recovery after having been laid up for three months; she had influenza the next year with no complications and was back at work in a fortnight.

LENGTH OF ILLNESS AND NUMBER OF ATTACKS

The duration of disability, based on the length of time the patients were visited, is a rough measure of the severity of the illness. Obviously, some patients cast off medical attention at an earlier stage than others, while factors other than the severity of the illness influenced the time taken to recover; for instance, necessity drove some back to work too early, whereas valetudinarianism prolonged convalescence in others. But in the main the years in which the illness lasted longest were the years in which it was most severe. Of the survivors, 42 per cent. were well in less than one week; 33 per cent. in from one to two weeks; 14 per cent. took between two and four weeks; 8 per cent. one to three months; and 2 per cent. (12 patients) took over three months.

Relapse or recurrence of the illness within twenty-one days of the onset was seen in four cases, on the 7th, 9th, 13th, and 20th days respectively, and in each of them the relapse was worse than the original attack.

Second attacks developed, between one and three months after the first attack, in seven cases; the shortest interval was between Dec. 1st and 25th; the longest Oct. 30th to Feb. 2nd. The patients had all recovered and gone back to their usual life before the second attack; this was always worse than the first, and in six cases was complicated—by otitis media (1), by cardiac debility (3), of which one was further complicated by cardiac infarction, by bronchitis (1), or by relapse during the second attack (1).

Multiple attacks with intervals of eight months or more were incurred by 63 patients; the largest number for one patient was seven in the nine seasons.

(To be concluded)

SHEFFIELD ROYAL INFIRMARY.—A new operation theatre block to be named the Silver Jubilee Block is to be erected this year at the Sheffield Infirmary. In 1934 for the first time for many years the income of the infirmary exceeded its expenditure, and this money is being used to build the new block.

NEW HOSPITAL FOR BANBURY.—It is proposed to build a new hospital for Banbury and its district as the improvement of medical services, the increased readiness of patients to come into hospital, and the growth of the workpeople's hospital association has overtaxed the accommodation of the present institution.

suggested that the patient was a Mr. M., vice-chairman of the Bath City Football Club. A porter at the hospital, who knew Mr. M., confirmed the suggestion. A fellow-director of the Football Club happened to be at the hospital and had no hesitation in identifying the injured man as his colleague Mr. M. Someone having communicated with Mr. M.'s household, his father went to the hospital and recognised the patient as his son. It was not till Mr. M.'s wife arrived that the mistake was discovered. She at once declared that the man was not her husband. Later in the day the real Mr. M. came home safe and sound and the true identity of the motor-cyclist was established. Such is the force of suggestion; one person's statement persuades others. If St. George is seen upon the walls of Jerusalem by hundreds of Crusaders, there must be someone who sees him first before the crowd accepts the miracle.

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lowest represent some limited region of the body; the middle are re-representative; the highest are re-re-representative. With the actual sites and physiological activities of these levels we need not here deal; and it is true that in some ways his views on the subject of "levels" were speculative. But the doctrine is what matters; it is finding to-day more assent and substantiation than ever before.

In these and other ways, then, Hughlings Jackson contributed to the science of neurology foundation stones on which others are building—some, doubtless, who know not whence the understructure is derived. Proof of the abiding value of his work has been forthcoming for years now in the increasing attention paid to his views by scholars abroad. His papers and articles (a selection of the more important of which was published in two volumes in 1931–32) take some reading; as Ferrier remarked with truth, there is much repetition and iteration of the dominant ideas, and his style is frequently obscure, owing to the numerous provisos and qualifications which he constantly introduced to prevent his being misunderstood. For these and other reasons they have to be perused at leisure and not at speed; but they contain a wealth of material which has not even yet been fully gone over. It is only when they are thus examined that the knowledgeable reader has been able to find anticipation of later work—a good instance being Jackson's observation of the phenomena of apraxia 30 years before the late Prof. H. Liepmann produced his studies.

Enough has been said to illustrate the reception given by Jackson's colleagues, friends, and scientific contemporaries to his epoch-marking labours, and to support the claim that little indeed of his work "dates"; his enunciation of cardinal principles and elucidation of nervous modes of action do not depend on any manner of thinking that has become obsolete. No doubt Jackson was a product of his period, and in not a few respects advancing knowledge has left him behind; his innate modesty never led him to say more of his views than that they were theories and speculations and that some day he would be "found out"; but he is honoured to-day by neurology the world over, because of his genius in raising ideas of neural activity to higher planes of thought and in discovering unities amid heterogeneous clinical diversities.

MEDICINE AND THE LAW

Mother's Claim to Child

The dispute between Mrs. Hinckes and Mrs. MacLean for the custody of the latter's daughter, Jean Crichton (to which brief allusion has already been made [1]), was settled last week when argument in the Court of Appeal had disclosed a position of some legal difficulty. Jean was born in 1923; when three weeks old she was placed with Mrs. Hinckes, the proprietress of a home for babies. Mrs. MacLean, employed as a nursing sister overseas, was unable to make a home for the child; she paid Mrs. Hinckes £65 a year till August, 1930. Then, after a year's lapse owing to her unemployment, she resumed payments at the rate of £45 a year till 1933, when she returned to England for reasons of ill-health. It was clear that the mother made provision for her daughter's maintenance to the extent of her power. It was also clear that Mrs. Hinckes, having grown fond of the child, was willing to keep her without payment, and indeed wanted to keep her altogether. In 1933, when Jean spent part of her holidays with her mother, Mrs. Hinckes applied to the Steyning magistrates for an adoption order, but the mother refused her consent. This refusal was fatal to the application in view of Section 2 (3) of the Adoption of Children Act, unless the magistrates thought that the mother had deserted the child or persistently refused to contribute to its support or was a person whose consent "in the opinion of the court and in all the circumstances of the case" ought to be dispensed with. Mrs. MacLean wanted the return of Jean and, being now able to make a home for her, took out a writ of *habeas corpus*. As is well known, this procedure is one of the historic safeguards of English freedom. The courts thereby inquire the causes for which any of the King's subjects are deprived of their liberty; it is the pre-eminent remedy for illegal confinement. Its use in the present connexion was a little uncommon, and Mr. Justice Atkinson, before whom the case came, seems in part to have treated the proceedings rather as an application under the Adoption of Children Act than as a question of the grant or refusal of an order of *habeas corpus*. He made a conditional direction for which there seems no precedent. He saw Jean and the two claimants privately, and he learnt that Mrs. Hinckes was willing to apply at present for an interim adoption order only; she was willing to keep Jean for two years at her own expense and would allow Mrs. MacLean to have the child at holiday times. He found that Jean was afraid of, and had no affection for, her mother. He therefore refused to order the return of Jean to her mother forthwith but made a direction substantially in the terms of the interim adoption order for which Mrs. Hinckes was asking. Mrs. MacLean appealed to the Divisional Court, where the two judges took the view of "the man in the street," that a mother ought not lightly to be deprived of her child and that this particular mother could not be a bad guardian for her daughter if the court below had been willing to let her have the child for the holidays. Mrs. Hinckes in turn appealed to the Court of Appeal on the ground that Mr. Justice Atkinson had seen the girl and had consulted her wishes, whereas the Divisional Court had declined to see her and therefore had no material whereon to overrule him. It was argued for Mrs. Hinckes that Jean would have a better home if she stayed where she had been brought up, and that there was no evidence of genuine affection on the part of the mother. At the end of the day Lord Justice Slesser drew attention to the unprecedented and possibly irregular action of Mr. Justice Atkinson in attaching conditions to an order made on a *habeas corpus* application. Next morning the court announced that the case had been wisely settled on terms which were not disclosed. Thus we have no judicial guidance as to the mother's legal right to her child, or as to her right to have an opportunity of winning its affection before custody is finally transferred to someone else.

Fallibility of Identification

The fallibility of human testimony in identifying dead or injured bodies is a phenomenon of which coroners and police officers are well aware. There was a fresh instance at a Bath hospital last week. A motor-cyclist was thrown from his machine and fell under a two-ton lorry, sustaining severe injuries to the head. There was no immediate means of identification when he was brought to the hospital, but, according to the local newspaper, one of the ambulance party suggested that the patient was a Mr. M., vice-chairman of the Bath City Football Club. A porter at the hospital, who knew Mr. M., confirmed the suggestion. A fellow-director of the Football Club happened to be at the hospital and had no hesitation in identifying the injured man as his colleague Mr. M. Someone having communicated with Mr. M.'s household, his father went to the hospital and recognised the patient as his son. It was not till Mr. M.'s wife arrived that the mistake was discovered. She at once declared that the man was not her husband. Later in the day the real Mr. M. came home safe and sound and the true identity of the motor-cyclist was established. Such is the force of suggestion; one person's statement persuades others. If St. George is seen upon the walls of Jerusalem by hundreds of Crusaders, there must be someone who sees him first before the crowd accepts the miracle.

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[1] THE LANCET, March 23rd, p. 690.

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PARIS

(FROM OUR OWN CORRESPONDENT)

THE FRENCH MEDICAL PRESS

THE recent annual dinner of the Association de la Presse Médicale Française serves to remind the rest of the medical world of the existence of this very live body. Sir Dawson Williams used to call medical journalism the smallest specialty in medicine but the Association is none the less powerful in its own way, and an effective guardian of its members' interests. It began quite modestly half a century ago with the object, convivial rather than trade-unional, of bringing together every quarter the directors and editors of the medical journals. On these occasions solutions were found to problems whose discussion in the press might have been less amicable, since it is easier to agree over a glass of wine than over the printed page. The annual subscriptions covered the cost of the meals eaten, and provincial colleagues were invited to fill gaps left at the table by absentee members. After the late war, however, difficulties arose requiring more than conviviality, and from being an informal dining and debating society the Association has had to convert itself into a *syndicat*, a sort of trade-union, fighting for the interests of its members. With the devaluation of the franc and the rise in the cost of production, the medical journals have had to charge more both to subscribers and advertisers, though considerable economies have been effected by centralised purchase of raw materials and other means. A united front has also had to be shown to the collectors of taxes. The reluctant admission that the scientific and brilliant editor does not necessarily possess all the qualifications required of a successful business manager has led to a certain readjustment between the editorial and managerial departments, to the benefit of both; and here, again, the Association has oiled the wheels of progress. At its last annual meeting it appointed a technical commission to study the industrial and commercial problems in which the journals are interested, and to put forward proposals for their solution.

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FORENSIC SEQUEL TO AN INJECTION OF CAMPHOR

A too legally minded engineer, Michel Hertz, has lately demonstrated the unwisdom of suing your doctor for damages just because something goes wrong. Having undergone resection of the nasal septum, he was three days later given a subaponeurotic injection of oil of camphor into the right thigh. A diffuse phlegmon ensued. The surgeon whose nurse had given the injection was accordingly sued for the modest sum of 100,000 francs. The first medical referee reported in favour of the claimant, arriving at his verdict by what he admitted was a process of exclusion. It seemed to him that, in the absence of other plausible explanations for the genesis of the phlegmon, it behoved him to assume that the nurse had not observed the necessary antiseptic precautions. The surgeon claimed and was allowed another medical opinion, which was given by three experts who, in their lengthy report, came unanimously to the conclusion that the mishap could not be traced to any fault of cleanliness. Although the phlegmon had developed at the site of the injection and was, like it, subaponeurotic, and although there was no question as to the sterility of the injected fluid, it was impossible to exclude the hypothesis of a phlegmon forming as a more or less innocent fixation abscess. In other words, camphor may localise germs which have been circulating in the blood, or may even provoke a sterile abscess. With this possibility always present, it was argued for the defence that the defendant could not be held responsible for the phlegmon in this case, the less so as no direct evidence had been produced as to the non-observance of the proper ritual of a sterile injection. Although the claimant lost his case, being awarded no damages and having to pay the costs of the action, it is to be feared that this legal decision will do little to stem the tide of compensation-thirsty litigants whose numbers are growing yearly.

FUSION OF FRENCH TUBERCULOSIS JOURNALS

For several years the Comité National de Défense contre la Tuberculose has published an excellent journal, the *Revue de Phtisiologie*. Another journal, also excellent, the *Revue de la Tuberculose* has been published by the Société d'Etudes Scientifiques sur la Tuberculose. Their individual merits could not, however, hide the fact that they were overlapping each other, and the fusion of the two is now an accomplished fact. The new monthly journal appears with the title of *Revue de la Tuberculose*, and represents both associations.

A MEMORIAL TO ÉMILE ROUX

Under the patronage of the President of the Republic and many distinguished Frenchmen in all the walks of life, a national subscription has been opened for the creation of a Roux Foundation whose funds are to be devoted to providing scholarships for young students with an aptitude for the biological sciences. It is hoped that the financial resources obtained for this object will enable the Pasteur Institute to continue to promote that research which Roux valued so highly, and which of late has been greatly hampered by the financial losses which the Institute has suffered.

POLAND

(FROM OUR OWN CORRESPONDENT)

RESPONSIBILITY OF A HOSPITAL FOR DAMAGES

In insisting on a new trial of a claim for damages against a hospital, despite the fact that it had been dismissed by two other courts, the Supreme Court has created an important precedent. The plaintiff, who had previously been sound and healthy, received dental treatment at a clinic in 1933. Later an ulcer appeared near the affected tooth and she was found to be suffering from syphilis. It is alleged that the instruments used by the dentist had not been properly cleaned, and that the infection had entered the system by a small lesion near the tooth. The patient claimed heavy damages; she held that she should be compensated, not only for cost of treatment and expenses incidental to her illness, but also for her diminished chances of marriage. The first two courts that heard the case dismissed it on the grounds that a hospital may not interfere with the work of its surgeons, and therefore cannot be held responsible for their mistakes. The Supreme Court, however, distinguished between mistakes due to lack of skill or an error of judgment, and mistakes due to gross negligence which it considered the organisation of the hospital should be able to prevent, and it ordered a fresh trial.

IRELAND

(FROM OUR OWN CORRESPONDENT)

PUBLIC HEALTH IN THE FREE STATE

In introducing his estimate for local government and public health to the Dáil last week, the Minister, Mr. Sean T. O'Kelly, was able to give an encouraging report as to the public health of the country during the year. He stated that there was a distinct improvement in the incidence and death-rate from the principal epidemic diseases. A total of 667 deaths were recorded as due to influenza, as against 1791 in the previous year, and an average of 1438 for five years. The infant mortality had fallen from 65 to 63 per 1000 from the previous year, the average for five years being 69. The maternal mortality-rate was the same as in the previous year—4·4 per 1000 births—but the mortality from puerperal sepsis had increased from 80 deaths to 92. There was a decline in both the incidence of and the mortality from diphtheria. The Minister thought that this improvement might be largely attributed to the immunisation campaign which was being pursued all over the country. Enteric fever had shown a rise from 440 cases in 1933 to 590 in 1934, and the number of deaths had increased by 14.

Medical officers of health had been appointed in 22 counties; 4 counties were proceeding to make appointments; and steps were being taken to compel the remaining county to make an appointment. Schemes for the treatment of tuberculosis were in operation in every area except the county of Longford, and a scheme would soon come into force in that county. There had been no addition during the year to the districts in which school medical inspection schemes were in operation—namely, 4 county boroughs and 18 counties. The appointment of more county medical officers of health would make possible an extension of school schemes.

THE MILK BILL

The Milk and Dairies Bill, 1934, passed its final stages in the Dáil last week, and is now before the Senate. The Bill makes provision for the registration of all dairies and dairymen engaged in the sale of milk, the registration to be in the hands of the local health authorities. The local authority is given the right of entry and inspection. In certain conditions the medical officer of the local authority is given the power to examine the person of workers in dairies suspected of being the source of infection in milk. The Minister is authorised to make regulations prescribing the designations under which milk may be sold or offered for sale, and to issue licences for the use of such designations. It is prohibited to use such a designation without a licence. Strict provisions are intended to prevent the sale of infected milk and the sale of milk from diseased animals. Adequate powers are given to the local authority for the sampling and bacteriological examination of milk offered for sale.

It may be said that the Bill furnishes a not unsatisfactory code of law for the control of milk in the hands of an energetic local authority. Its whole success in practice will depend on vigour in administration. Unfortunately a public health system is of such recent birth in Ireland that the people of the country and the members of the local authorities are alike unaccustomed to active public health administration. Most of the county medical officers, themselves only recently appointed, have their hands full already with other duties, and unless given adequate assistance can hardly spare much time to the administration of the present measure. The interest of the local authorities will be considerably chilled by the fact that the entire expense of working the Bill is thrown on their shoulders. The Government would have got much more ready coöperation from the local authorities if the expense of administration had been divided between local and central funds. In some minor matters the Bill is capable of amendment, and it is hoped that the Senate may succeed in getting some improvements made.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

MENTAL DISEASE IN SCOTLAND.

THE steady accumulation of certified patients in mental institutions continues to present a serious problem. According to the General Board of Control for Scotland, whose 1934 report has now been issued, there were in Scotland on Jan. 1st of this year 19,685 insane persons of whom the Board had official cognisance. This represents an increase of 147 compared with the previous year. All the asylums have exceeded the number of patients which can be accommodated with safety from the point of view of health and administration, and many have become gravely overcrowded. The system of boarding-out in Scotland has been attended with conspicuous success, and the Board advise that the use of this method should be accelerated. This would help to relieve congestion, but extension of asylum accommodation is also urgently required. The death-rate of patients in mental hospitals, per cent. of the average number resident for the year 1934, was 6·9.

There is a steady lessening of public prejudice against mental hospitals, and with this change the difficulty of accommodation is bound to become more and more acute. There is, for example, an increasing tendency to send elderly patients with cerebral degeneration, due to vascular disease or tumour, to mental hospitals, owing to the difficulty of handling such cases at home or in a general hospital. General hospitals are intolerant of patients with mental confusion, aphasia and incontinence, but it sometimes seems to be a little cruel to certify elderly patients suffering from organic disease of the brain such as cerebral tumour and cerebral thrombosis.

THE LATE COLONEL THOM

The sudden death of the superintendent of Edinburgh Royal Infirmary will be felt keenly by the managers and by all who work in the hospital. Colonel Thom had a remarkable gift for organisation and for seeing that everything was done properly. He spared himself no effort to improve the efficiency of the Infirmary, and by his enthusiasm, tact, and kindliness, not only enlisted the whole-hearted coöperation of the staff, but at the same time won their deep affection and regard. It is no easy matter to superintend a voluntary hospital of 1000 beds, and it is still harder to appreciate the traditions and peculiarities which such a hospital possesses. Colonel Thom, however, very soon grasped the situation with such ability that both the managers and members of the staff came to count on his advice when difficulties arose. His charming personality made it a pleasure to discuss difficulties with him, and his death gives us at the Infirmary a feeling of personal loss; the R.I.E. will not be the same without "the Colonel."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 30TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2519; diphtheria, 1372; enteric fever, 16; acute pneumonia (primary or influenzal), 1799; puerperal fever, 41; puerperal pyrexia, 145; cerebrospinal fever, 33; acute poliomyelitis, 4; encephalitis lethargica, 6; continued fever, 1 (Ebbw Vale); dysentery, 7; ophthalmia neonatorum, 104. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 6th was 3885, which included: Scarlet fever, 1144; diphtheria, 1716; measles, 22; whooping-cough, 348; puerperal fever, 23 mothers (plus 10 babies); encephalitis lethargica, 270; poliomyelitis, 2. At St. Margaret's Hospital there were 19 babies (plus 12 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London there was no death from small-pox, 3 (1) from enteric fever, 20 (0) from measles, 6 (0) from scarlet fever, 27 (5) from whooping-cough, 47 (6) from diphtheria, 48 (14) from diarrhœa and enteritis under two years, and 181 (26) from influenza. The figures in parentheses are those for London itself.

The peak of influenzal deaths has probably been reached, the number of reported deaths for the last few weeks, working backwards, being 181, 175, 145, 139, 83, 91, 83, 91, 71, 56. This week these deaths were reported from 69 great towns; Liverpool reporting 12, Manchester and Birmingham each 11, Sheffield and Sunderland each 7, Stoke-on-Trent 6, Oldham and Bristol each 4. (During the same week Glasgow reported 33 deaths, Edinburgh 8.) Wolverhampton reported 3 fatal cases of measles, no other town more than 2. Three deaths from diphtheria occurred at Bradford, at Leeds, and at Newcastle-upon-Tyne.

The number of stillbirths notified during the week was 288 (corresponding to a rate of 43 per 1000 total births), including 48 in London.

NEW HOSPITAL AT EAST GRINSTEAD.—The market town of East Grinstead, in Sussex, with its rapidly growing community, has long been confronted with the need of a larger hospital. In 1929 a scheme was brought before the townspeople, but little support for it was forthcoming; it was thought that the time was not ripe for an outlay of £25,000, the figure then mentioned. Rapid building developments in the town and the surrounding district quickly increased the demand for beds at the existing Queen Victoria Hospital, with the result that the 12 beds, 3 cots, and 1 paying ward were constantly occupied, and cases had to be sent to London, Redhill, Tunbridge Wells, and Haywards Heath. This created an outcry, and in 1931 a public meeting of 400 residents voted unanimously for a new hospital. The building, whose foundation-stone was laid by Lord Horder on April 6th, will cost £27,000, and of this sum only £4500 remains to be raised. In a short speech Lord Horder spoke of the sound principle of decentralisation of hospital work. The dissemination of medical and surgical advances was now so rapid, he said, that they knew nearly as much in East Grinstead as in London. Moreover, there were advantages in treating and nursing patients in the country rather than in London, and he could not call to mind a cottage hospital so well situated and so admirably conceived as that at East Grinstead. Lord Horder went on to say that he was still an advocate of the voluntary hospital system, and he hoped that any change towards another system of administration would be a gradual one.

PUBLIC HEALTH

Hospital Services in Scotland

In contrast to the position in England and Wales, where the power of local authorities, including county councils, to provide hospital accommodation of any kind is absolute under the Public Health and Local Government Acts, in Scotland it is limited to the councils of counties and large towns (over 20,000 in population) and is contingent upon approval by the Scottish Department of Health of considered schemes for the reorganisation of the hospital facilities of these councils. South of the Border, it is true, a council proposing to make new hospital provision must consult a body representative of the voluntary hospitals in the area, but there is nothing to compel it to adopt the latter's suggestions. If it intends to borrow for the purpose, as is usually the case, the Minister's sanction must be obtained so that, indirectly, the Ministry of Health is able to signify its approval or disapproval of the scheme. In Scotland, however, the central department's duty to review the whole of the institutional provision in an area, whether under council or voluntary management, before signifying approval of a scheme, is obligatory under Section 27 of the Local Government (Scotland) Act, 1929. The Scottish department must, therefore, review all the hospital accommodation available for the people of an area when any proposal for increasing or reorganising it is made; and it must be satisfied that the authority has taken reasonable steps to seek and continue to secure full coöperation with every voluntary hospital, university, or medical school within *or serving* the area.

FIVE REGIONAL CENTRES

It will be seen that this duty really places the department in a position to exercise the initiative in hospital reorganisation and it has set out a very definite policy as to how the Act of 1929 should be made effective. The great teaching centres of Edinburgh, Glasgow, Aberdeen, and Dundee have all along served a much wider area than these towns through their associated hospitals, and it is proposed that these should form regional centres, a fifth region, comprising a large part of the Highlands, being centred on Inverness. The department has set its face against the multiplication of small and inefficient units. Its aim is set out thus [1]:—

> (1) to raise the standard of institutional treatment of the sick poor to the accepted general hospital standard;
>
> (2) to secure, by coöperation—in any of its numerous forms—between local authorities of adjacent areas the maximum development of a few chosen institutions rather than the uncoördinated extension or indefinite continuance of a large number of small units, more or less duplicating one another's services, equipment, and staffs;
>
> (3) to foster coöperation between the statutory and the voluntary hospital authorities so that together they may make a full contribution to the treatment of the sick, to medical teaching and research, and collaborate in the solution of those problems of hospital administration (e.g., allocation of patients, scales of charges and payments of staffs) in which their interests are, or must ultimately be, inextricably intertwined.

Even before the transfer of poor-law functions, a measure of coöperation between districts had been attained, some use had been made of poor-law hospitals for medical education, and the city and county councils of Aberdeen had gone far in attaining a common hospital policy, in collaboration with the voluntary hospitals serving their areas. Obviously it will take a long time to make the proposed regional system really effective. Practitioners in remote parts will incline to send their difficult cases to the teaching hospitals where they were trained, in preference to a centre which, perhaps, they have never seen, and with the staff of which they have had no contact. At first sight it would appear that the inclusion of Argyll, parts of which are close to and within easy access of Glasgow, in a region centred upon Inverness is irrational, but, no doubt, the department is faced with the need for increasing the population served at this centre in the interests of efficiency, and it may be that it expects difficulties of distance and transport to be overcome by the development of the air ambulance service already established by Argyll county council and other Highland authorities.

COUNCIL OR POOR LAW

As in England and Wales, the council hospitals exceed the voluntary hospitals in number and accommodation. There are 243 council hospitals, with 18,670 beds, as against 206 voluntary hospitals, with 12,575 beds. When, however, special hospitals of the kind which serve those purposes which have long been the province of statutory public health administration are deducted (e.g., hospitals for fevers, tuberculosis, maternity, and children's diseases) there are left, under local authorities, 59 poor-law general hospitals, with 5570 beds (of which 55, with 3270 beds, are mixed institutions, in Scotland called poorhouses), and 5 general hospitals, transferred away from the Poor Law, containing 1580 beds. The total number of general hospital beds under local authorities is therefore 7150, compared with about 7000 voluntary beds allocated to general surgical and medical work. The department draws attention to the inferior structure and inadequate staffing of most of the 55 mixed poorhouses, and the bad tradition which hinders their development. Nothing short of the removal of the sick from these institutions to proper hospitals will, in its opinion, enable the ideals underlying the Act of 1929 to be achieved. It should be one of the first aims of local health administration. The retention under the Poor Law of some of the largest and most up to date of the transferred hospitals, such as those in Glasgow, is a matter for some surprise, but it must be remembered that the Scottish Local Government Act contained a saving clause in Section 12, enabling a council to transfer administration of an institution to another committee than the public assistance committee "for the purpose of coördinating the services provided by the council," an action which could not be taken in England and Wales without the formality of appropriation. In effect, therefore, it is possible in Scotland to substitute the spirit of public health administration for that of the Poor Law, while leaving the selection and admission of patients under the old régime. It is a compromise, however, which should be temporary and is bound to hinder that full coöperation with the voluntary hospitals and medical schools which the department desires.

LOCAL OBSTACLES

While some progress in hospital reorganisation is recorded in 1934, the department is meeting with obstacles of local interest, prejudice, and inertia for which, no doubt, they were prepared. An attempt to centralise accommodation for infectious diseases in Ayrshire has failed because of disagreement as to methods between the county and Kilmarnock town councils. An effort to persuade Dunfermline town council to look far ahead in its planning of new maternity beds, so that they should ultimately form part of a hospital centre, was only partially successful. The town council of Stirling seems to be determined upon the improvement of its own small fever hospital rather than coöperation with the county council. In spite of more enlightened movements in Inverness and Fife, the department records that progress in hospital reorganisation has been slow and, on the whole, disappointing.

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[1] Sixth Annual Report of the Department of Health for Scotland, 1934. H.M. Stationery Office. 3s. 6d.

APPOINTMENT OF A DIETITIAN AT HAMMERSMITH HOSPITAL.—Among the special cases concentrated at Hammersmith Hospital will be many requiring special dietetic treatment, and a special dietetic kitchen is being arranged, to be ready for use, if possible, by July 1st. All the L.C.C. hospitals have food supervisors in charge of the ordinary kitchens, but it is proposed to put a dietician in charge of this kitchen at a salary of £150–£10–£200, together with board, lodging, washing, and uniform.

L.C.C. AND I.C.A.A.—The London County Council having been informed by the Invalid Children's Aid Association that its provision of convalescent treatment for children referred to it by hospitals, care committees, and the like, is likely to be curtailed by lack of funds, the Council proposes to use the services of the Association for the disposal of children for whom the Council is itself unable to provide. Capitation payment will be made at the rate of 7*s.* 6*d.* a week for eight weeks, and the situation will be reviewed in six months' time.

PANEL AND CONTRACT PRACTICE

A National Laboratory Service

IN the teaching hospitals the medical student is called upon to devote a large part of his time to laboratory work, both practical and theoretical, but so far as the medical man going into panel practice is concerned, this part of his training is largely nugatory, for the National Health Insurance Acts make no provision whatsoever for any form of laboratory service for patients insured under the Acts. The insurance practitioner may prescribe what he likes in the way of drugs, proprietary or otherwise, but he is given no facilities for ascertaining in the first instance whether his diagnosis be correct, and in the second the response of his patient to the treatment given. Sir Ernest Graham-Little recently asked the Minister of Health if provision could not be made at an early date for such a laboratory service, but the Minister held out no hope of any immediate extension of the scope of medical benefit in this direction. A memorandum issued by the Association of Clinical Pathologists points out that in certain districts, e.g., Manchester and Wigan, local arrangements have been made, rendered possible by loop-holes in the Acts, and for the reason that unallocated funds happened to be available. In other areas, e.g., Chester and Wolverhampton, laboratory facilities have been offered by the local voluntary general hospitals at special cheap rates. The Association holds the view that a matter of this importance should be dealt with otherwise than by taking advantage of loop-holes in Acts of Parliament or by the charity of voluntary hospitals, and for some years past it has been urging the inclusion of laboratory examinations as a benefit under the National Health Insurance Acts. A schedule of charges has been drawn up at which the investigations essential in general medicine can be performed without loss to the laboratories performing them. The Association is of the opinion that clinical pathology can only be properly carried out by those in close touch with clinical medicine, that is to say, in the laboratories attached to general hospitals. There exists to-day a network of such laboratories conveniently distributed over England and Wales in all the more important towns; with their aid the pathological services needed by insured patients could readily be met.

The Practitioners' Fund for 1934

The amount of the fund has been finally determined by the Ministry of Health at £6,676,573. This amount is subject to economy deductions, 10 per cent. for the first half year, and 5 per cent. for the second, the amount available for distribution being £6,175,830. Insurance practitioners therefore contributed from their remuneration in 1934 over half a million pounds towards placing the country on a sound financial basis. It is to be hoped that the Chancellor of the Exchequer, in view of his Budget surplus, may be able to restore the capitation fee to its normal value during the present year.

London's share of the fund continues to decrease. In 1933 the areal percentage was 12·6666, but for 1934 it was 12·5685, producing £776,209. Of this amount £762,645 10*s.* had been distributed by way of quarterly advances; so that including a balance of £1 7*s.* 11*d.* brought forward from 1933 there remains £13,564 to be distributed, as compared with £18,892 last year. The total payment for 1934 will amount to 8*s.* 7·4932*d.* per unit of credit, as compared with 7*s.* 11·4652*d.* for 1933. Some of this increase is, of course, due to the remission as from July 1st of half the economy deduction, but the clearance of the medical register which took effect as from Jan. 1st, 1934, made a difference of nearly sixpence in the value of the unit of credit in London.

The amount of the fund for 1935 has been provisionally determined, after deduction of 5 per cent., at £6,050,000, and, as in previous years, the Ministry state that it must not be assumed that the final determination of the fund will necessarily enable any additional payment to be made to practitioners at a later date.

What is a Partnership?

This question sometimes becomes a conundrum. It was related in this column on Feb. 2nd that Dr. A. and Dr. B., having between them a list of some 5000 insured persons, were said to be in partnership. Dr. B. left the practice and Dr. C. joined Dr. A. as a partner, signing the necessary form, in which it was declared that Dr. C.'s share of the profits was not less than one-third of Dr. A.'s. Information having been received about the terms of the agreement between Dr. A. and Dr. B., the committee refused to recognise Dr. C. as a partner until the partnership deed had been produced for inspection. The committee's solicitors held that Dr. C. was not in the position of a principal and that his share of the profits was obviously less than a third of Dr. A.'s share. The insurance committee agreed with the legal opinion, and it was expected that the firm would be surcharged for the 1000 patients or so exceeding the maximum permitted to principal and assistant. The practitioners having been informed of this decision, their solicitors wrote contesting it but expressing the willingness of Drs. A. and C. to consider any change in the partnership deed which the committee's legal advisers might suggest as desirable.

A conference between the solicitors for the two sides has been arranged, but meanwhile the question arises as to the basis upon which payment should be made for the quarter commencing Jan. 1st, 1935. The allocation scheme lays it down that a practitioner shall be given a period of two months from the date upon which an excess number of insured persons on his list was discovered within which to make arrangements to bring his list into conformity with the scheme. The areal distribution scheme (which in this respect differs from the model distribution scheme) provides that for the purposes of the distribution of the practitioners' fund the number on the list of a practitioner shall not in any case be deemed to exceed 2500 in the case of a practitioner practising otherwise than in partnership. . . The effect of the committee's decision of Jan. 24th is to place Dr. A. in the position of a practitioner practising otherwise than in partnership, but it appears that by the terms of the allocation scheme (which would seem to be somewhat in conflict with the distribution scheme) he has a period of grace of two months as from Jan. 24th within which to make arrangements for carrying out the requirements of the regulations. Payment to Dr. A. and Dr. C. for the current quarter will accordingly be based upon their actual figures of credit.

A Revised Scheme at Newcastle-upon-Tyne

On April 3rd the city council of Newcastle-upon-Tyne adopted a revised scheme of payment for the medical practitioners working the open-choice method of providing domiciliary medical services in the city. The position was set out in this column a fortnight ago. Instead of participating in a fixed pool of £1200, which was the amount provided for the six districts concerned, the scale of remuneration will now be as follows :—

(1) 20*s*. per annum for patients receiving medical treatment throughout a period of 12 months ;

(2) 5*s*. per quarter for short-period cases ;

(3) special fees payable for confinements, fractures, certificates, &c., to remain as at present.

The scheme is to be tried out for the year beginning April 1st, 1935 ; payment on the same scale will be made retrospective to Nov. 8th, 1934. It is anticipated that the new scale of remuneration will produce 1*s*. 3¼*d*. per unit service as contrasted with 5½*d*. under the pooling arrangements. The original scheme applied to six of the ten medical relief districts in the city. A seventh district has now been added. The estimated cost of domiciliary medical services, exclusive of drugs and dressings, is estimated at £3485 a year.

An Urgent Night Call

An insured person attended at a practitioner's surgery on an evening when he was away and a locum tenens in charge. She declined his offer to open a whitlow under an anæsthetic, but undertook to apply hot fomentations at home, it being understood that she would call at the surgery on the following morning. During the night pain became intense, and at about 4.30 A.M. application was made by her sister and a friend at the practitioner's residence for an immediate visit as the insured person had fainted. The messengers were informed by the practitioner's mother that he was out, and they intimated that, in the circumstances, they would have to obtain the services of another doctor. This they did and incurred thereby expenses amounting to half a guinea. The London insurance committee, in considering the question of responsibility for this fee, elicited the fact that the practitioner's mother was acting under his direction when she informed the messengers that he was not at home, although as a matter of fact he was standing on the stairs listening to the conversation. There was some divergence of testimony as to whether the patient's name was mentioned—she lived at a house which is also occupied by other families—but it was clear that no application was made in terms for a visit to an insured person. The practitioner stated that although he would not have responded to a call from a private patient, he would have responded if he had understood that the application for his services was in respect of one of his insured patients. The medical service subcommittee in its report states that it is, of course, desirable that an insured person applying for treatment, or a messenger applying on behalf of an insured person, should indicate to the practitioner that treatment is required for an insured person ; and if the practitioner has any reasonable doubt about the identity of the applicant, he is entitled to require the production of the medical card. But in this case it was felt that the messengers having been informed that the practitioner was out, their view that in his absence the question whether the patient was insured or not did not arise was perfectly reasonable. Having regard to the hour and the emergency, the failure on the part of the applicants to indicate that the practitioner's services were required for an insured person seemed to the committee of secondary importance in view of the incorrect information given to them by the practitioner's mother. The subcommittee found that the practitioner had committed a breach of the terms of service in failing to provide treatment to an insured person who had applied to him ; and that expenses amounting to 10*s*. 6*d*. were reasonably and necessarily incurred in obtaining the services of another practitioner. The insurance committee adopted the subcommittee's recommendation that the practitioner should be required to accept responsibility for the payment of the fee to the other doctor.

Police Convalescent Home at Hove.—No fewer than 1016 police officers were received by the Police Convalescent Home at Hove last year. Of these London supplied the large majority, and at the annual meeting on March 18th Mr. Max Page, consulting surgeon to the Metropolitan Police, stated that during the ten years he had been sending men to the Home they had always returned absolutely sane in body and mind. Unfortunately the financial position is causing some concern, for the credit balance amounts to only a few pounds. In the absence of the Home Secretary, Sir John Gilmour, the proceedings were presided over by Mr. Norman Kendal, assistant commissioner to the Metropolitan Police. Lady Gilmour represented her husband. Warm tribute was paid to the hon. medical staff, Dr. E. Wight, and Dr. C. Curwen ; also to Miss M. Kerr, hon. lady superintendent.

Fellowship of Medicine and Post-Graduate Medical Association.—An afternoon course in psychological medicine will be given at the Maudsley Hospital from April 23rd to May 31st. Other forthcoming courses include dermatology at the St. John's Hospital (April 29th to June 1st); medicine, surgery, and gynæcology at the Royal Waterloo Hospital (April 29th to May 11th); thoracic surgery at the Brompton Hospital (May 13th to 18th); chest diseases at the Brompton Hospital (two afternoons a week at 5 P.M., in June); chest and heart diseases at the Victoria Park Hospital (two afternoons a week, at 6 P.M., in June); evening clinical and pathological class (two evenings a week in June). Week-end courses include cardiology at the Victoria Park Hospital (May 4th and 5th); chest diseases at the Brompton Hospital (May 11th and 12th); and fevers at the Park Hospital (June 15th and 16th). Courses of instruction and clinics arranged by the fellowship are open only to members and associates, with the exception of the course at St. John's Hospital.

PARLIAMENTARY INTELLIGENCE

OSTEOPATHS BILL

Select Committee's Inquiry

(Continued from p. 836)

THE *Committee's inquiry continued on Friday,* April 5th and Monday, the 8th, with Lord AMULREE in the chair.

Presentation of the Book

At the outset Mr. THORPE, K.C., principal counsel for the promoters, presented to the members of the Committee copies of a book entitled "The Scientific Basis of Osteopathy." The book, he said, had been written by Dr. Kelman Macdonald in the last eight days, and set out, so far as had been possible in the time available, the justification for osteopathy.

Sir W. JOWITT, K.C., principal counsel for the British Medical Association, said that he did not object to the presentation of this book, though it was a rather odd procedure. He had the honour of being referred to in the book, which apparently contained criticisms of what he had said. The book had taken eight days to write, but how long it would take to read intelligibly he did not pretend to say.

Mr. THORPE explained that the book had been largely inspired by Lord Dawson's invitation to Dr. Macdonald to produce any scientific basis for osteopathy which was available. If there was anything in the book on which Sir W. Jowitt would like to ask questions he would ask permission for Dr. Macdonald to be recalled.

Lord DAWSON said he had asked that the original papers already published should be produced.—Mr. THORPE said that they were reproduced word for word in the book.

Lord DAWSON suggested that the book was really a reprint of the 18 research bulletins, plus extra information.—Mr. THORPE agreed. I understand, he said, that the bulletins are there in toto.

Sir Morton Smart's Evidence

Sir Morton Smart, M.D., late medical officer in charge of the electrical department of the Hospital for Sick Children, Great Ormond-street, was called in opposition to the Bill. In answer to questions by Mr. DICKENS, counsel for the British Medical Association, the witness said that since 1896 he had devoted his chief attention and study to manipulative surgery and medicine in all its branches. He had written a text-book and articles on the subject, and had done a great deal of practice in manipulative surgery, particularly in the case of traumatic damage to bones and so on. His view was that manipulative surgery was a valuable method of treatment in certain cases. Those who undertook it should understand the scientific basis on which it depended, and have a knowledge of anatomy, physiology, normal joint action and movement, and pathological conditions. This method of treatment must be preceded by clinical diagnosis. While it was of great value in certain cases, it could in others do great harm. Commonly it was employed in association with, or as a preliminary to, other treatment. The value of such treatment was widely recognised by the medical profession, but it should *not* be applied indiscriminately and unscientifically. He had studied osteopathic literature both in this country and the United States of America, for many years, and he had visited that country several times.

THEORY AND PRACTICE

COUNSEL: You know what the theory of osteopathy is?—WITNESS: Yes.

Are you a believer in the theory of osteopathy?—No.

Have you attempted to understand all the matter which has been put before the public and the profession by the osteopaths?—Yes.

Have you found any evidence of any scientific basis for the theory which the osteopaths hold?—Not for the theory.

From what you know of the theory should it be capable of scientific proof, if it were true?—I think if the theory were true, in view of the large number of people in the world suffering from diseases and disabilities, it would be impossible not to prove it.

Would you go further in regard to the claims in regard to acute disease and say that the untruth of the theory of osteopathy is demonstrable?—Yes.

You would say that it could clearly be demonstrated that their claim for instance in the case of infectious disease is without foundation?—Yes.

Is osteopathy in practice valuable in certain cases?—Yes.

Can you say the extent of its value—it is not of universal value?—Osteopathy—and when I say osteopathy I am referring to manipulative surgery—is definitely useful in a large number of cases. And in the cases in which it is useful it can be shown that the reason is that it is based on well-known pathological knowledge.

The theory of osteopathy has grown considerably since the days of Dr. Still?—Yes.

And have osteopaths apparently been more and more ready to adopt other such therapeutic agents as the medical profession use?—There is overwhelming evidence, both in America and in this country, that osteopaths, while trying to adhere to the original theory of Still have wandered far from that theory and now embrace practically every method of treatment known to scientific medicine.

What do you deduce from that as to the value of the original theory?—I deduce from that that the osteopaths themselves have realised that the original theory cannot possibly be the cause of all diseases and therefore in the name of osteopathy they have taken over every method they could lay their hands on to get results.

Replying to further questions by counsel as to how, in his opinion, osteopaths should be employed, and whether he thought they should be given complete charge of a case from the beginning to the end, the witness said he thought definitely that osteopaths should work under the direction of a medical practitioner who had studied the question. It appeared to him that if any body of practitioners were to be legally allowed to treat the sick, whatever their treatment might be, they should pass a minimum standard similar to that of the medical colleges.

THE VALUE OF PUBLIC DEMAND

In answer to a question by counsel as to the value which he placed on any public demand in these matters the witness said that he thought that the public did not inquire carefully enough into these matters. Most people were liable to think that a treatment was a good treatment because they knew of a case which had been successful while under that treatment; but they did not go closely into the question as to whether it was cause and effect. There were hundreds of examples of that, and the point about the vox populi was that though it might be stated that the public wanted osteopathy, and that might be true, the section of the public who wanted this treatment was far smaller than the public themselves believed. He contended that it was the people who had gone to osteopaths and had been successfully treated who were mainly those who were called the vox populi. On the other hand, there were a large number who had gone to osteopaths and had not been successfully treated.

Lord ELIBANK asked if that would not also apply to doctors. Was that an argument against osteopathy?—WITNESS: Decidedly. It bears out my point that it is not due to successes that a treatment is scientifically assigned.

Lord DAWSON suggested that the point was this, that it was not good evidence for the establishment of any treatment to bring forward a series of isolated cases, and that if they wanted to prove that a particular treatment was successful or not, that could only be done along the lines of scientific methods by marshalling say 500 or a 1000 cases. That applied to any treatment.

Lord ELIBANK asked the witness whether he would say that the cures in osteopathic cases had only been in isolated cases.—WITNESS said he decidedly agreed that the cures by osteopathic treatment were isolated. It was only a certain type of case that was cured by that treatment.

COUNSEL was proceeding to ask further questions on the attitude of the public towards osteopathy when the Chairman interposed.

COINCIDENT CURE

The witness, continuing, said that in his experience over many years he had been up against this question of explaining to patients why certain treatments which they received did not cure them. If osteopathy or other treatment took place pari passu with symptoms from whatever cause, the patient spoke enthusiastically of its success. The coincident cure in spite of treatment embraced an enormous number of apparent successes. A good example was what was called water on the knee. In a great majority of cases such condition, as far as the presence of fluid was concerned, would clear up in from six to ten days, even if no special treatment was prescribed. If such a patient underwent osteopathic treatment and recovered, it was little wonder that such a patient believed that the diagnosis was right when the fluid which was the main symptom, disappeared. The patient believed that it was the direct result of the manipulation of the spine, and naturally as a result the osteopath gained a convert. There was indisputable evidence that harm had been caused by osteopathic manipulation. Particularly was that the case in regard to the wasting of valuable time in critical cases where the diagnosis had been wrong, and where early diagnosis would have effected a cure or would even have saved the patient's life. There were also serious psychological dangers. There had been a large number of cases where osteopathic manipulation had resulted in damage to the soft structures such as the muscles.

The witness went on to quote from McConnell and Teall's text-book, where it was stated that the general rules laid down were applicable to all dislocations, whether partial or complete, and it was further stated that the practitioner should exaggerate or increase the dislocation. The witness, commenting on this, said that if they were dealing with the dislocation of the spinal vertebræ, and one started by exaggerating it, the danger was something appalling. The damage to the cord would be terrible. If anyone was trying to deal with a spinal dislocation, the first essential was not to exaggerate it because of the damage of further pressure on the cord. With regard to the danger arising from the waste of valuable time in such cases, the witness said that it was well known that many cases of tumour of the brain had been treated by osteopaths for a period, and if that period had not been wasted an operation would have given a very great chance of success. He knew of two cases in his own experience of that kind.

COUNSEL: That emphasises the value of proper diagnosis before any treatment is attempted.—WITNESS: Yes.

Turning to the phychological effect on the patient, the witness said that some patients went to an osteopath and had a diagnosis made. For instance, they were told that their hip was out, or their pelvis was out, and that various parts of their spine were out. That had a very serious effect on the patient because it put into his mind that these things were wrong. There had been an actual case of a girl who was going to be married. She had a hip which was bigger on one side than on the other as a result of starting riding side-saddle at an early age. Her future mother-in-law took her to an osteopath, who told her that her pelvis was contracted and small; and that it would be very dangerous if she had any children. The result of that was very serious to the mother and the daughter. He (the witness) pointed out that the best way to decide that was to have the girl X rayed, and it proved that there was no contraction of the pelvis at all.

Lord ESHER: Was that a qualified osteopath.—WITNESS: What is a qualified osteopath? He was not a doctor.

THE QUESTION OF REGISTRATION

On the question as to whether osteopaths should be placed on a State register, the witness said in his view it was not in the public interest that State recognition should be given to a group of practitioners who based their practice on a theory which was unsound and unscientific. If the present Bill was passed it meant that in the opinion of those responsible for its passing the foundations of the principles of osteopathy were admitted to be proved, in spite of the fact of the overwhelming evidence that the medical profession of the entire world disagreed upon these essential points, and the natural corollary was that medical and surgical treatment as practised to-day in all civilised countries, should be prohibited in the public interest. If State registration was to be given to osteopaths on the ground of public demand it would be impossible to decline registration to every other cult—chiropractors, nature curers, Christian Scientists, and so forth—who could prove popularity among the public. The witness added that he would say that such people commanded as much public support as the osteopaths.

In regard to qualifications, the witness said he thought it would be intolerable that those who held diplomas of the British School of Osteopathy should be placed on a State register. No college should be recognised for the purpose of a British State register, the standard of which could not be carefully scrutinised and controlled. It would be absurd to recognise for admission to an Osteopathic register qualifications of a lower standard to those of American medical degrees. He did not think it would be a good thing to have powerful American influence in deciding the standards for admission to a British register.

COUNSEL: Is your opposition dictated by any fear of the consequences to yourself and your fellow practitioners?—WITNESS: Many accusations have been made against the powers that be in medicine in regard to their opposition to the Osteopaths Bill, and none has been more constantly reiterated than that which affirms that we resist the registration of osteopaths because of a fear of the competition which would follow the giving of a legal status. Nothing could be further from the truth than that. That aspect of the matter has never even been considered; Whatever may be the sins of medicine in the past, modern medicine is eagerly ready to receive with sympathy any improvement in technique and treatment, any new ideas in pathology, provided that they are scientifically proved, although it may do so with slowness and caution.

Sir Morton Cross-examined

In reply to Mr. THORPE, the witness said that Dr. Mennell and himself could both fairly be regarded as exponents of manipulative surgery. He was certainly in agreement with some of Dr. Mennell's views, though he did not say all.

COUNSEL: As far as practice is concerned, there is very little difference, if any, between the practice of osteopaths and the practice of manipulative surgeons?—WITNESS: I do not see any reason why an osteopath, or any person accustomed to the manipulation of joints, should not do the actual practice of manipulation as well as any other person.

There is the theory and the practice of osteopathy. As far as practice is concerned are you not doing the same as Dr. Macdonald or Mr. Streeter?—Certainly, as regards Dr. Macdonald.

What is a qualified osteopath?—I should say Dr. Macdonald.

You would not regard any osteopath as qualified coming from an American school?—The Americans themselves do not, and I should not.

Unless a man is a qualified medical man first and then an osteopath you would not call him a qualified osteopath?—No.

Do you object to these unqualified people practising?—Certainly not.

Does it amount to this, that you object to any theory and practice in a man who has not taken a medical degree, and that objection disappears as soon as he takes a medical degree?—Not by any means; it is a question of his skill.

The witness added that he disagreed with Dr. Macdonald in regard to the acceptance of the theory of osteopathy. Replying to further questions, he said he gave drugs where necessary, but in most cases where it was essential to use drugs he would hand the case on to a different type of practitioner to himself. But he was not against the use of drugs.

COUNSEL: But you are not a great believer in drugs?—WITNESS: To a certain extent that is true.

COUNSEL suggested that manipulative surgery was comparatively new in England.—WITNESS: It goes back 400 years before Christ.

How many schools are teaching it?—I think practically all the medical schools have now an orthopædic department.

If the situation remained as it was to-day, the right solution, Sir Morton said, was that osteopaths should act under a qualified medical man, but the better solution would be that osteopaths should take a medical qualification first and then practise osteopathy afterwards.

COUNSEL: You would approve if a medical man called in an osteopath and they worked in conjunction?—WITNESS: For treatment.

The doctor would diagnose and ask the osteopath to treat the patient?—Yes.

That is as far as you go?—Yes.

Sir Morton Re-examined

Replying further to Sir W. JOWITT, the witness explained the sort of case in which manipulative surgery is necessary and effective. The main type of case, he said, was that in which there was limitation of joint movement, usually due to adhesions. There was a second class of case in which the tissue, which was an important part of structures, lost its resiliency and affected the movement of the joint. There were also cases of dislocation—e.g., of the cartilage of the knee, &c. In the correct type of case, he said, manipulation was the only useful treatment.

COUNSEL: Do you think you can do any good to a person suffering from measles?—WITNESS: No; I think it is fantastic.

Or pneumonia?—Equally.

If the osteopathic theory is right can you conceive any room left for the use of drugs?—None.

Can you doubt that there are cases in which the use of drugs is necessary?—Most decidedly. I get many cases where I consider it is essential to consult with other doctors because they are outside my line.

I suppose that manipulative surgery requires a great deal of practice to get your hands good, to use a *riding* phrase. You need good hands and an acute sense of touch, and unless you practice very carefully you cannot do it?—I think it is like everything else where you have a coördinated movement. You have some people who are good at it and some who are not so good at it.

You get a large number of patients sent to you by ordinary practitioners?—Yes.

Have you any doubt that to-day the value of manipulative treatment is fully recognised by the medical profession?—Most decidedly it is—since the war. That was the time when it first came into prominent use. As the result of the war there were many cases which were suitable for manipulative surgery and Sir Robert Jones made a great effort at the time. From that day onwards manipulative surgery has increased unbelievably.

Not long ago we had the Grand National, and I think that no fewer than nine of the riders have been to you recently, have they not?—Yes, including the winner.

I suppose there may be great danger in manipulative surgery unless there is proper diagnosis?—Yes.

THE THEORY OF OSTEOPATHY

Replying to Lord ESHER, who asked if there had been any scientific examination of the theory of osteopathy, the witness said that he had examined thousands of spines and had the record of them in his case-books.

Lord DAWSON: Do you agree that any competition in throwing into the arena individual successes and failures serves no useful purpose in furthering knowledge?—WITNESS: Absolutely none.

And that is equally true whether it is medicine, or osteopathy, or herbalism, or anything else?—Yes.

If you want to test the truth of a theory there are definite methods which have been practised by all workers through the ages?—Yes.

MANIPULATIVE SURGERY

Replying further to Lord DAWSON, the witness said that fractures might be caused by manipulation in the wrong cases. There was bad manipulative surgery, comparable to bad osteopathic manipulation.

Lord DAWSON: Is it true to say that where harm occurs there has been faulty diagnosis?—WITNESS: Yes; faulty diagnosis and faulty technique.

Lord ELIBANK: Where did Sir Robert Jones get his idea of manipulative surgery in the first instance?—I think originally he got his desire to go in for this kind of treatment from a bonesetter—and so did I. Osteopaths did not exist then. When I first started to take an interest in manipulative surgery it was as a result of a bone-setter in Edinburgh. I think Sir Robert Jones's experience was the same in Liverpool. That was before osteopathy came to this country.

Replying further to Lord ELIBANK, the witness agreed that the practice of osteopathy was identical with the practice of manipulative surgery. Osteopathy was merely another name for manipulative surgery. But he did not agree that osteopathy was based on scientific thought and observation because the osteopaths had built up a pathology which, in his opinion, did not exist.

But you told us that the practice of osteopathy was identical with the practice of manipulative surgery. If manipulative surgery is based on scientific thought and observation why is not osteopathy?—WITNESS: Because the osteopath does not give the same pathology for the result of his manipulation as I do.

MANIPULATION AND FITNESS

The witness agreed with Lord Elibank that the same result would probably follow whether treatment was given by a manipulative surgeon or an osteopath if it was a case where manipulation would succeed. A large number of cases went to osteopaths. A large number of them were successful, but a large number were unsuccessful.

Lord MARLEY: Would you think that if patients followed your advice and came for an overhaul from time to time that the result of your examination and possible manipulation might be to prevent them from becoming ill?—WITNESS: It is difficult to answer yes or no. You probably do not realise that the fittest person in the world, if he has all the joints of his body manipulated, will get up and say that he feels good. He gets a feeling of well-being, but that will not prevent him getting pneumonia, or typhoid fever.

Would it not have a psychological effect?—The psychological effect would not prevent infection by the typhoid baccilus.

Lord MARLEY said he understood that a person in a good state of health was less likely to get disease and the witness agreed. If you are fit your resistance is definitely better than if you are not.

Lord MARLEY: Is there any human being structurally perfect?—WITNESS: Most decidedly not. You have only to look round this room. I train every child I can to stand and sit correctly. If you start young it has an amazing effect on their general health. As a rule, in a patient over 21, if he has not been taught to sit and stand correctly, it is too late to correct the spine. It was not necessary to have osteopaths to make children grow up properly.

Would it not help children to have regular examinations ?—They are examined and helped by the medical profession, but they take not the slightest notice. For children manipulation was not necessary. It was a question of training them to get their spine into the correct position.

THE OSTEOPATH'S TRAINING

The CHAIRMAN asked the witness whether he thought that a man who had spent five years studying the subjects prescribed in the Bill and who had passed the necessary examinations would still be unfit to make a diagnosis, and the witness replied that it would depend on the standard of the examinations. Ten years' training would not qualify a man if the standard of education was not right. How, he asked, could an osteopathic college be brought up to the standard of the universities, with their superior teaching, laboratory, and financial resources ?

This fear about the standard of education makes you fear that an osteopath qualified on that basis would not be able to make a proper diagnosis ?—Yes.

WITNESS agreed that if osteopaths had a minimal standard of medical education they would be valuable ancillaries to treatment.

Asked whether a register of qualified osteopaths would not be in the public interest the witness said that a register would not prevent any unregistered person giving osteopathic treatment so long as he did not call himself an osteopath and that immediately would defeat the object of a register.

Sir Farquhar Buzzard Recalled

Sir FARQUHAR BUZZARD, recalled, said that in the scientific world a claim for recognition must be accompanied by prima-facie evidence. There must be something to investigate. The volumes produced by the Still Research Institute had been examined in detail by a number of competent research workers and the conclusion reached was that they did not afford such evidence. It had been claimed before the Committee that skilled manipulation of the spine would prevent all disease and cure particular diseases in the early stages. If that was true it would constitute the greatest medical discovery during the last half-century, and the whole medical profession would welcome it with open arms—as they had welcomed every great discovery when its basic principles had been demonstrated. American scientists had had osteopathic schools and hospitals in their midst for fifty years, and would have gladly told the world that an American was the greatest discoverer of our age ; but every medical man of repute in that country—a country which had been the birthplace of many important scientific discoveries — repudiated the osteopathic creed Thousands of post-mortem examinations were conducted throughout the world every week by expert pathologists with the one object of finding abnormalities, and it was inconceivable that the osteopathic lesion had escaped their observation when, according to osteopaths, it was present in every person suffering from disease. Though the British School of Osteopathy had something that was called a pathological laboratory, it had not a single specimen illustrating the osteopathic lesion. America, said the witness, in conclusion, was a young country, and lack of experience had allowed individual States to be rushed into passing very unwise and very confused legislation in regard to various healing cults. But if Great Britain, with all her great traditions of sanity, at this period in her history were to follow the example of the United States in recognising these evanescent cults, she would undoubtedly be a laughing-stock among the nations. The first step was an easy one, but it made retreat exceedingly difficult, as America had already found to her cost.

Speaking of the memorandum submitted by about 800 scientists and teachers setting out reasons against the Bill, Mr. THORPE, counsel for the promoters, said he noticed that there were only 12 signatories from Edinburgh, where, he was told, there were 300 or 400 teachers. "Would I be right," he asked, "in saying that the majority of teachers at universities and medical schools have not signed ?"—The Witness : "Quite wrong."

HAS OSTEOPATHY BEEN INVESTIGATED ?

Replying to Mr. THORPE, the witness said he had no knowledge that the current doctrine of osteopathy had been investigated in any university laboratory in this country. The fact that osteopaths, by right or wrong methods, had brought relief to sufferers, did not constitute prima-facie evidence in favour of their theories.

COUNSEL : What is the minimum of prima-facie evidence that would be necessary to set in motion this great machinery that is always waiting to consider current theories ?

The witness replied by repeating his statement that if the American scientific side of the medical profession had found anything in the osteopathic creed it would have been heard of long ago.

COUNSEL : Quite apart from America, has any British school of research gone out of its way or spent a moment of time considering the theories advanced by osteopathy ?—WITNESS : No.

COUNSEL : Will you give the reason ?—WITNESS : I have given the reason. There is more than one reason. I explained that something which has been before scientific bodies for fifty years and which has received no recognition, would not seem to be a very likely field for further research.

COUNSEL later asked if it had never occurred to the research workers that it might be in the public interest to explode theories and practice which the witness believed to be wrong. Sir FARQUHAR BUZZARD replied that he hoped they were doing it. They had been doing it before this Committee started, and the question had been recently raised by the introduction of the Bill.

COÖPERATION AGAIN

Later in the cross-examination Mr. THORPE returned to the question of coöperation with osteopaths.

COUNSEL : The minute a man gets a medical degree he can practise osteopathy with impunity. He does not lose caste with his medical brethren ?—WITNESS : That depends entirely on a personal question. You cannot make a generalisation.

COUNSEL : If it is a fallacy, would not it be in the public interest to say that no one who comes under the control of the British Medical Association shall practise osteopathy ? Take a man like Dr. Macdonald who is an unashamed and unmitigated osteopath ; is it in the public interest that he should be allowed to continue these fallacious theories and practice ?—WITNESS : I cannot answer that question.

COUNSEL : I want your views.—WITNESS : I say "No."

Later the witness said he was expressing his own view. He could not object to his practising. He would say he did not think it was desirable to practise as a follower of Andrew Still.

COUNSEL remarked that Sir Henry Brackenbury was rather generous when he said that so far as the increasing recognition of manipulation and the limitation in the use of drugs was concerned he would like to give the osteopaths every credit for having emphasised these points. He asked the witness if he would go so far as that. The reply was : "I give it all the credit that is due."

Is any credit due?—I do not know.

That is most generous of you. Do you agree with Mr. Mennell that each branch of the profession has something to give to the other ?—Undoubtedly.

Questions from the Committee

Mr. RADCLIFFE, K.C., Counsel for the Royal Colleges, then examined Sir Farquhar Buzzard. The witness declared that if there was scientific evidence it could be produced in any country to medical societies and the like.

Lord Esher pointed out that Dr. Macdonald said he had endeavoured to get his theory examined and was ready to produce evidence of it, and the medical people had always refused to examine it. The witness said he knew that Dr. Macdonald had talked to medical societies and had the opportunity of putting forward in a categorical way the evidence which he considered scientific evidence.

Lord Elibank: Yet the medical societies have not thought it worth while to pursue the subject ?—Witness: Having heard it—no.

Lord Elibank: Is it not wrong that the Medical Council or medical societies have taken no notice in spite of the fact that osteopaths are practising all over the country ? —Witness: Why wrong ?

Lord Esher: Because you maintain that they are a danger to the community. What is scientific research for if it is not to protect the public ?—Witness: It is clear that we could have legislation against anybody practising the healing art who is not qualified, but as a matter of fact we have not got it. There is no legislative action against anybody practising the healing art. We cannot therefore protect the public in that way. The public can go to any cult but they take their own risk. At present they know where they can go to qualified medical men but they can go elsewhere if they like.

Lord Esher: I suppose you think medicine is securely based on science ?—Witness: I think it is.

Lord Esher: When did medicine become scientific ? —Witness: You could not give a date, but it has become more of a science than an art. There has been an enormous advance in the last hundred years.

The witness agreed that when they bled people and gave a lot of drugs it was a danger to the public, and he admitted it would have been a pity if medicine had then been discouraged and handicapped.

Lord Esher: And that is what you are now proposing to do with osteopathy ?—Witness: Yes.

Sir Farquhar Buzzard again pointed out that to say that large numbers of people had been cured was not prima-facie evidence. In the course of answers to Lord Dawson, he agreed that the crucial difference between manipulative surgery and osteopathy is that the former confines itself to a delimited sphere, whereas osteopathy claims all the diseases. This was the reason why the claims of osteopathy must be opposed.

Lord Esher asked whether osteopaths would be welcome if they put up their scientific case before the scientific people in this country after the inquiry. The witness replied that they would.

Lord Elibank: What chance would the osteopaths have if they put up their case, in view of the statement signed by so many teachers and scientists ? What chance would they have of proving anything ? Is not it prejudged in that statement ?—Witness: No. I do not admit prejudice against osteopathy but I am against it.

When the Committee met again on Monday, Sir Norman Walker, President of the General Medical Council, gave evidence on behalf of the Council. He submitted to the Committee a lengthy memorandum which the Chairman said would be included in the minutes of evidence.

Memorandum from the General Medical Council

This memorandum of evidence opened with a résumé of the conditions of practice in Great Britain and Ireland before the establishment in 1858 of a register of qualified medical practitioners, and the constitution of a Council to keep this register. It went on to describe the functions of the Council in regard to registration and medical education, and then, as the body entrusted with the care and maintenance of the Medical Register, to offer observations on the provisions of the Bill as it stands.

The Bill, the Council find, is one which appears to contemplate a departure from the policy hitherto pursued in legislation in regard to the practice of medicine in this country. The Medical Acts have not been directed to the creation of any monopoly in the healing art, but merely to ensuring the maintenance of a register designed to inform the public of the names of those persons who have carried out a sufficient curriculum and passed examination tests sufficient to justify the appellation " qualified." The standard required by the General Medical Council for qualification and registration has not remained stationary, but has steadily risen with the increase in medical knowledge. It would appear that the provisions of the Bill would create some confusion in the mind of the public, since the new register of osteopaths proposed to be set up would contain the names of persons whose standard of education varied from that laid down by the General Medical Council for medical practitioners; and the Bill would further appear to have the effect of substantially restricting the practice of medical practitioners registered under the Medical Acts in certain directions wherein they now practise freely.

CLAUSE 2.—" THE PRACTICE OF OSTEOPATHY "

The Council are unable to find in the Bill any definition of the scope of this practice or of the nature of that which is to be practised.

The omission from the Bill of any precise definition of osteopathy is, however, a matter of crucial importance to the public, for by Clause 8 of the Bill every person (whether a registered medical practitioner or not) who is not registered as an osteopath is prohibited under penalty from practising the undefined, or holding himself out as a practitioner of it, or as being prepared to practise it.

The Memorandum prefixed to the Bill (which would have no statutory effect if the Bill became law) appears to be intended to suggest (1) that there is an easily identifiable " art and science of healing as defined under this Bill " (Memorandum, line 22), and (2) that the proper definition, which is nowhere to be found in the text of the Bill, would be to the effect that osteopathy is " a developing system of treatment of disease by manipulative methods " (Memorandum, lines 2 and 3).

If this assumption be correct, what is proposed by the Bill is to prohibit large and increasing numbers of registered medical practitioners from practising in a branch of surgery which has been followed by qualified practitioners both before and since the passing of the Medical Acts. The minimum medical curriculum laid down in the resolutions of the Council specifically provides that every medical student shall receive (i) practical instruction in surgical methods, including mechano-therapeutics, and (ii) special instruction in orthopædics, if this is not included in the course of systematic instruction (also specifically prescribed) in the principles and practice of surgery, or in the course of instruction in surgical methods prescribed under (i).

Provision is made for the instruction of students in manipulative surgery by the medical schools in which candidates are prepared for the qualifying examinations of every licensing body. Various medical schools have established special departments for instruction in orthopædic surgery (including the use of manipulative methods). Various licensing bodies have instituted post-graduate diplomas in orthopædic surgery (including the use of manipulative methods) which recognise the special efficiency of the holders to practise this branch of surgery.

The intent and effect of the Bill appear to be on the one hand to exclude registered medical practitioners from a field of practice for which they possess the statutory qualification, and on the other hand to admit exclusively to this field persons who remain unqualified and unregistered because they have not gone through the courses of study and examinations requisite under the Medical Acts, to practise an undefined method of treatment.

The position of registered medical practitioners under the Bill is to be contrasted in this respect with the position of osteopaths under the Medical Acts, which contain nothing to prevent a registered medical practitioner from adopting any theory of medicine or surgery, including osteopathy, but contain (in section 28 of the Act of 1858) a provision specifically prohibiting the Council from erasing the name of any person from the Medical Register on the ground of his having adopted this or any other theory of medicine or surgery. In the enjoyment of the liberty thus secured to them by the Medical Acts, certain registered medical practitioners are understood to have adopted the theory of medicine or surgery known as osteopathy, and to have practised as osteopaths; but no question of the retention of their names on the Medical Register has been or can be raised on that ground.

Sir Norman Walker Examined

In reply to the CHAIRMAN, Sir Norman Walker said that he had been a member of the General Medical Council for 28 years and its president for three. Explaining the position in regard to medical reciprocity, he said that the term did not occur in any Act of Parliament. After a certain amount of previous preparation and after agreement had been reached, the Privy Council, if it thought fit, applied Part II of the Medical Act of 1886 to a particular country in respect of reciprocity. We have in this country, he said, medical reciprocity with two countries—Italy and Japan. In Japan, as in many oriental countries, there were grades of doctors; Japan only asked this country to accept the equivalent of its highest grade. In most other foreign countries it was necessary for a medical man to become naturalised before he could practise there. Part II of the Medical Act, 1886, was applied to any Dominion of the British Empire if they wished it. It was applied now to New Zealand, Australia, South Africa, and parts of Canada. Canadian medical legislation was not quite the same as our own, because each province had its own conditions. There was no medical reciprocity between us and the United States. The witness added that some years ago he went over to the United States to explore if there was any way of arriving at nearer reciprocity. There was in the United States a voluntary Association and National Board with medical examiners extending all over the States. Most of the States accepted their examination instead of their own. There was a joint agreement arrived at between the licensing bodies and the colleges in this country and the National Board, that they would each admit to their final examination graduates from both countries, but they must pass the examination.

CHAIRMAN: Must they take a course of training?—WITNESS: That depends upon the licensing body; I think all of them require some instruction in this country

NO MONOPOLY OF HEALING

Mr. THORPE, cross-examining the witness on behalf of the promoters, called his attention to a passage in his memorandum in which it was stated that the Medical Acts had not been directed to the creation of any monopoly in the healing art. He asked the witness to explain why he took that view.—WITNESS said that he could not regard the medical profession as possessing a monopoly. It was perfectly open for anyone to take the advice of any person he likes. The Medical Acts were passed to establish that there were certain people who had gone through certain regulations.

COUNSEL put it to the witness that he must accept the fact that there was a monopoly in regard to Government appointments.—WITNESS said that was so, because legislation had been passed confining those appointments to persons whose names appeared on the Medical Register.

COUNSEL: Your memorandum states that if this Bill was passed it would create confusion in the public mind. Why is that?—WITNESS said he certainly thought there would be some confusion if another register was introduced. Everyone would not differentiate between those who were on a register for one form of healing and those who were on another.

A ROYAL COMMISSION OF INQUIRY

Lord ELIBANK asked the witness if he would favour an investigation into the whole of the principles of osteopathy.

Sir NORMAN said he would have no objection to an investigation. I think, he added, that the history of medicine is very illuminating in this way. It took more than half a century to get the Medical Act through Parliament. There was an enormous number of Bills introduced into the House of Commons, and in 1881 the Government appointed a Royal Commission to inquire into the question. As a result the Act of 1886 was passed.

You suggest that the investigation should take the form of a Royal Commission.—I would be quite in favour of that.

Who in your judgment should sit on such Royal Commission; what class of people? Take the statement of Sir Farquhar Buzzard and the 800 people of great distinction in the scientific world who signed that statement to the effect that there could be no compromise between medical science and osteopathy; they were incompatible and contradictory; would those gentlemen who made that statement be reliable investigators of the principles of osteopathy if they were on a Royal Commission?—WITNESS said he thought there must be a general opinion, even among their Lordships, that it was very difficult to know what osteopathy was. But he certainly thought that there were a lot of names on the memorandum referred to who would be quite suitable to be members of such a Royal Commission.

You really think that you could get a Royal Commission on this subject that would be impartial and unprejudiced and which would examine the question with fresh minds?—WITNESS said he thought that such a Royal Commission could be set up.

I take it therefore that you do not rule out of your mind that there is possibly a great deal in osteopathy?—WITNESS said it was very difficult for a medical man trained as he had been as a pathologist to accept the theory of osteopathy.

Lord ESHER remarked that Sir Norman was the first medical witness who had been before the committee who had not shown prejudice against osteopathy without having examined it.

THE CURRICULUM

Asked by the CHAIRMAN to state his view about the proposed amendment of the Bill extending the period of osteopathic training from four to five years, Sir Norman said that for years the General Medical Council had been raising the standard of medical education. The Council did not act by compulsion, but rather followed methods of peaceful persuasion. All the teaching bodies now accepted five years as the minimum curriculum of study. The Council welcomed the attitude of some bodies who did not think that five years was enough. There were several universities which now required six years' medical study, and the G.M.C. had nothing to say but commendation.

As far as you are able to judge, do you think five years sufficient for the training of an osteopath?—If osteopathy is what it claims to be I think it would be well that the person practising should have gone through a curriculum as long as that for a medical degree.

The witness went on to say that the General Medical Council were now reviewing the reports of their inspectors to see whether there ought to be further changes in the medical curriculum. It was not unlikely that there might be changes made in the curriculum so far as the first two years were concerned. There was a strong feeling that certain parts of the curriculum had outlived their usefulness. As showing that medical schools were now providing instruction in manipulative surgery, the witness said that Liverpool was granting a Mastership of Surgery in Orthopædics. The medical profession were now devoting more attention to manipulative methods.

Lord REDESDALE asked if the teaching in the medical curriculum was directed to the prospect of the practitioner himself making use of it.—WITNESS: Yes. In the surgical out-patient department this is a very important part of the treatment.

ANÆSTHETISTS FOR OSTEOPATHS

Asked by the CHAIRMAN whether medical practitioners could act as anæsthetists for osteopaths, the witness said that it was rather a curious thing that while the public was very ready to take all kinds of advice from osteopaths and others, they had peculiar faith in medical men in regard to the administration of anæsthetics. It was not illegal for anyone to give anæsthetics. He agreed that the difficulty was that if a fatality occurred an unregistered man might get into trouble, whereas in the case of a medical man the presumption was in his favour. The only person whose name had been erased from the register for giving an anæsthetic for an unregistered man was Dr. Axham. All such charges were carefully gone into, and he decided whether the charge or complaint was such that the practitioner concerned should be asked for his side of the story, or rather, for an explanation. The practitioner was written to at his (the witness's) direction, and if the explanation seemed to him satisfactory he did not bother the Committee with it; but if it did not it went before a special Committee of the Council known as the Penal Cases Committee, which considered every aspect, and the only complaints which they sent in to the Council were those which in their judgment were serious.

Lord ESHER asked if the general effect of the Council's rules at the present time would frighten an anæsthetist from assisting Dr. Macdonald because he was an osteopath.—WITNESS: I do not think so. If a charge were made against a doctor of giving anæsthetics for a registered practitioner, even if he was an osteopath, I do not think that it would be sustained.

Lord REDESDALE pointed out that it had been stated to the Committee that some doctor refused to make a culture for Dr. Macdonald on the ground that he was practising as an osteopath.—WITNESS said that was narrow-mindedness.

CHAIRMAN: If a medical practitioner was making a practice of assisting an osteopath would he be liable to have his name erased from the register?—WITNESS: He would be liable to have his case considered.

But would he be liable to have his name struck off?—WITNESS: I cannot commit the Council. The Council, he added, was a judicial body, and it did not pronounce what it was going to do beforehand. If in terms of the standing orders and warning notice a practitioner was enabling an unregistered person to practice as if he were a qualified practitioner then he would be charged.

Prof. Gask's Evidence

Prof. G. E. GASK, director of the surgical unit at St. Bartholomew's Hospital, then gave evidence. Replying to Mr. RADCLIFFE, counsel for the Royal Colleges, he emphasised the importance of a thorough training in surgery for anyone who was to practise the healing art. Sometimes a disease would simulate an injury and sometimes an injury would simulate a disease, and it would be difficult and might be unsafe to make a diagnosis unless familiar with all forms of disease. It was not compatible with his experience to say that there was any one chief cause of disease. Re-examined by Mr. D. L. JENKINS, the witness spoke of his experience in post-mortem examinations extending over forty years. If the osteopathic lesion was detectable in such examinations it ought to have been detected.

Lord ESHER: You say you have never been able to find the osteopathic lesion. But you have not been looking for the osteopathic lesion for forty years. When did you start?—WITNESS: In the course of my work I have had to examine spines and look at them very carefully.

Lord ESHER: Yes, but were you looking at the spines with the osteopathic theory in mind?—WITNESS: I was looking at them to see if there was any deformity or any disease of any sort.

Lord ESHER: If you had been studying the osteopathic theory for forty years you would not have found it necessary to send for text-books on the subject for the purpose of this inquiry?—WITNESS: I had not been studying the theory from the standpoint that there was one chief factor in the causation of disease and that there was one chief cure.

Lord ESHER: Therefore you have not been making a complete study of the osteopathic theory?—WITNESS: Of the theory that there was one chief factor for the causation of disease, no.

EDUCATION FOR OSTEOPATHY

Lord ELIBANK: Much has been said about diagnosis. Do medical practitioners always prove to be right in their diagnosis of appendicitis? Are not many operations performed in which it is found that the appendix is quite clean and in good order?—WITNESS: It has been so.

The witness added that he did not know whether that happened in many cases and he could not give any statistics about it.

Lord ELIBANK: It seems to me that if the osteopath is a qualified man who has undergone the training indicated in the Bill he should be just as capable of diagnosis as a medical practitioner?—WITNESS: Qualified medical practitioners naturally make mistakes; they are only human. But is it not likely that the man who is fully trained to the practice of medicine would be less likely to make a mistake than one who is not fully trained in all its branches, or who studies one to the exclusion of others? We believe that a man should be thoroughly trained in all branches of the profession up to the limit of qualification.

Lord ELIBANK asked if the witness had studied the Schedule in the Bill setting out the course of study for osteopaths. Prof. Gask said he was not familiar with its details.

Lord ELIBANK: Do you mean to say that you have signed a document like this against the Bill without having read the Bill? I wonder how many more of the 1600 persons who have signed this document have read the Bill?—WITNESS: I have read the Bill, but I do not pretend to carry in my head the exact details of the curriculum proposed.

Lord ELIBANK: Is it fair to put out an uncompromising statement like that without having read the Bill properly?—I have nothing more to say.

In answering questions by Lord DAWSON, the witness said that he held that the training for osteopathy should be as good and as long as the training for medicine; and if that were so he thought there would be no necessity for two parallel systems. Replying to Lord REDESDALE, who asked if the art of diagnosis was not more in the nature of a flair than the result of education pure and simple, he said he thought proficiency in diagnosis was the result of many years of study of details. In this connection he did not think that there was any such thing as inborn intuition.

Sir ARTHUR ROBINSON, Permanent Secretary to the Ministry of Health, then submitted a memorandum on behalf of the Ministry.

Memorandum from the Ministry of Health

The Minister of Health desires to put briefly before the Select Committee certain considerations relevant to the proposal for the establishment of a Statutory Register of Osteopaths, and in making these observations he has had regard both to his general responsibility for the health of the people and to his special responsibility for the statutory health services.

WHAT IS THE NEED FOR A SEPARATE OSTEOPATHIC REGISTER?

Before the measure of recognition involved in the establishment of a statutory register is given to osteopathy, it appears to the Minister to be essential that there should be included in the statute a definition of the meaning of osteopathy so clear and precise as to enable it to be differentiated without possibility of mistake from other forms of practice. Unless this can be done proper administration of the register would seem to be impracticable.

It is noted that the Medical Act of 1858 and subsequent legislation have established in this country a system of medical registration based on the principle that all persons seeking admission to the privileges of the register should satisfy certain common standards of education and qualification. Persons lacking the registrable qualifications are not prohibited from practising the art of healing, but they are not entitled to hold themselves out to the public as qualified persons, nor can they sue for fees, nor sign statutory medical certificates. It would appear from the schedule to the Bill that the education and training considered necessary for the properly qualified osteopath correspond to a very large extent with the orthodox medical curriculum, and such correspondence appears to raise the question whether there is any sufficient reason for the establishment of a separate register and a separate system of education and qualification for osteopaths. Section 23 of the Medical Act, 1858, specifically guards against any attempt on the part of the licensing bodies to impose upon candidates an obligation either to adopt or refrain from adopting the practice of any particular theory of medicine or surgery, and there is nothing to prevent any person who has gained admission to the Medical Register from practising the art of healing according to the osteopathic theory.

APPROVAL TO AWAIT SUBSTANTIATION OF PRINCIPLES

If, on the other hand, as appears to be maintained, the practice of osteopathy rests upon a fundamental basis other than that of the subjects included in the medical curriculum under the Medical Acts, 1858 and 1886, it appears to the Minister to be incumbent on Parliament to satisfy itself, before giving its assent to the present Bill, that the specific principles and system of healing proposed to be employed by those who will be registered as osteopaths is one which can be properly and safely commended to the public.

It is not within the scope of this memorandum to discuss the scientific and technical issues which underlie the differences between the doctor and the osteopath, but the further elucidation of those issues seems to be a necessary preliminary to the passing of legislation which will confer upon the practice of osteopathy the seal of Parliamentary approval (a fortiori the granting of powers and privileges on such persons). It is understood that those who support the Bill justify it mainly on the ground that it will enable the public to distinguish the qualified osteopath from the unqualified. But the Bill, if passed, cannot fail to do more than that; it will inevitably convey an assurance that a person who has satisfied the statutory tests for admission to the Osteopaths' Register is a person who is, in all respects, well fitted to undertake the various and heavy responsibilities attaching to the treatment of disease. In other words, Parliament will have given some sort of guarantee of the validity of the principles upon which the osteopath exercises his craft. The Minister conceives that Parliament will require such a claim as is here involved to be first very fully investigated and substantiated.

DIFFICULTY OF RECOGNISING EXISTING QUALIFICATIONS

Apart from the scientific issues, there are certain practical consideration which, the Minister suggests, should be taken into account before such a proposal is carried into effect. According to the Bill, there are three classes of persons who will be admitted to the Register :—

(*a*) graduates or licentiates of a British school of osteopathy;

(*b*) holders of certificates granted in a British dominion or foreign country;

(*c*) persons who have been engaged in the practice of osteopathy for three years prior to the passing of the Act and are in the opinion of the Board of Registration fit and proper persons to be registered.

Evidence will no doubt be laid before the Select Committee as to the operations of the British School of Osteopathy, but, as the Minister understands, the register would, in the first instance, be composed for the most part of a comparatively small number of persons who hold American degrees in osteopathy and a much larger number of other persons registered under (*c*) above, all of whom would become entitled to describe themselves to the public as osteopaths registered by Act of Parliament. It is alien to the general principles which have so far been followed in comparable legislation (e.g., that relating to the registration of medical practitioners, dentists and nurses) to recognise qualifications conferred by foreign educational institutions, and it seems a matter for consideration whether a register composed in this fashion is one which Parliament should take the responsibility of commending to public notice. It is suggested that, apart from other and more fundamental considerations, the question of establishing a register of osteopaths by Act of Parliament might well be deferred until a system of education in the principles and practice of osteopathy has been more fully developed in this country by an institution or institutions over which Parliament (or the Board of Registration) would be able to exercise adequate powers of supervision, inspection and control.

On a minor point, it is observed that the Government Department to which it is proposed that the Board of Registration should be made responsible in respect of its regulations is the Ministry of Health. On the assumption that the operation of the Bill is not intended to be limited to England and Wales, it would seem more appropriate to follow the precedents of the Medical Acts and the Dentists Acts by bringing the Board within the jurisdiction of the Privy Council.

EFFECT OF DUAL REGISTRATION ON STATUTORY HEALTH SERVICES

The Minister has an interest in this matter, not only by virtue of his general responsibility for the public health, but also on account of any repercussions which the Bill might have upon certain statutory services for the efficient maintenance of which he is responsible to Parliament. Among the more important of these may be mentioned :—

(1) The accurate determination and certification of the causes of death.

(2) The correct diagnosis and certification of sickness under the National Health Insurance Acts.

(3) The correct diagnosis and certification of infectious disease for the purposes of the Public Health and Infectious Diseases Acts; and

(4) The proper discharge of the medical duties imposed by Act of Parliament on medical practitioners or administered by local authorities and their medical officers and advisers, including the Vaccination Acts, the Public Health Acts, the Mental Deficiency Acts, the Workmen's Compensation Act, and the Midwives Acts.

As regards the first of these, the Bill itself authorises certain classes of registered osteopaths to give certificates of the cause of death, and a separate memorandum by the Registrar-General on this subject is annexed hereto. The matters referred to under (2), (3) and (4) above are not touched directly by the Bill, but the Minister apprehends that the passage of the Bill into law would in all probability be followed sooner or later by further claims from the ostepaths, e.g., for the right to participate in insurance practice and to take a share in the various and important medical duties entrusted to medical practitioners by the Public Health Acts. This consideration strengthens the view of the Minister that further inquiry into the osteopathic system is very requisite.

PROPOSAL FOR A SCIENTIFIC INQUIRY

In the light of these considerations, it appears to the Minister that a sufficiently strong case has not been made out for the adoption of the proposals in the Bill at the present time, and that the proper action at present is to set on foot an organised and careful scientific inquiry into the principles and practice of osteopathy by a body suitable for the purpose. Should this view be taken, those who are now practising osteopathy would, pending the result of the inquiry, have the choice open to them, should they be dissatisfied with their present status, either of qualifying themselves for admission to the Medical Register or of constituting a voluntary register of osteopaths, and establishing, as soon as may be, effective training institutions in this country for the appropriate qualification of persons who may desire to be admitted to that register in the future.

Sir Arthur Robinson examined

Replying to the CHAIRMAN, the witness said that the sort of inquiry which the Minister had in mind would probably be an inquiry set up by the Medical Research Council, but there were various ways of conducting inquiries of this kind. The principal object of such an inquiry would be as to the validity of the claims of the osteopaths.

The Minister expresses no view about the Bill ?—It is not possible for me to say that because the spokesman of the Ministry of Health in the House of Lords debate did, taking all considerations into account, oppose the Bill. That was, I think, done with reference to these considerations and various other considerations as well.

In other words a Bill of this kind should be preceded by a thorough investigation as to the claims of the new science ?—Yes.

ADMISSION TO A REGISTER

The witness said that the Ministry had had some experience of statutory registers, and for practical purposes they had to expect that a large majority of the persons practising at the time did obtain admission to the register. The Ministry felt some doubt in this particular case with regard to the admission of persons in category " C," because they understood that one of the reasons of the State register was to safeguard the public. It appeared to them that on previous experience there would be a certain number of persons in practice admitted to the register whose admission, from the point of view of the safety of the public, might seem open to question.

The CHAIRMAN : You would draw a distinction between osteopaths who had no other qualification than three years' practice and persons practising dentistry and midwifery with similar qualifications ?—WITNESS : Yes, I think we should. In the other vocations you have normal training or practice in this country over a protracted period. It was perhaps easier to form a judgment as to the suitability of such persons for admission to a State register.

And so far as dentists and midwives are concerned their practice is limited in scope ?—That is another factor.

In reply to the CHAIRMAN, the witness said that if the Bill became law and they had on the one hand the registered medical practitioner and on the other hand the registered osteopath, a position of great difficulty would arise from the point of view of public health administration. There would then be a claim on the part of the osteopath to be placed in the same position as the medical practitioner with regard to the various services under the National Health Insurance Acts. From the point of view of the administrator that would be rather difficult unless there had been full inquiry into the training and the validity of the training of osteopaths.

The CHAIRMAN : To sum up, the view of the Minister is that before Parliament should be invited to sanction this Bill a Committee of Parliament itself must be satisfied that osteopathy is on a sound and scientific basis ?—WITNESS : Yes.

Lord ESHER : Was the Minister's view as to the need of having a scientific inquiry altered by the evidence given before this Committee ?—WITNESS : The Minister is indisposed at the moment and he has not been able to study the evidence laid before your Lordships. I should not advise the Minister to vary the memorandum on the evidence so far submitted.

The Minister does not consider it the function of this Committee to discover the truth or the validity of the osteopathic theory ?—It would, I think, be rather improper for me to express a view on that.

THE KIND OF INQUIRY

Answering Lord ELIBANK as to the kind of inquiry which the Minister had in mind, the witness said that the Minister thought that the Medical Research Council might not do the work itself, but set up a body to do it.

Who do this Council consist of ?—It is a committee of the Privy Council and consists of both a professional and lay element.

That is very important. From the evidence we have heard there seems to be a great prejudice in the minds of medical people against osteopathy *qua* osteopathy, and I should view with anxiety an inquiry conducted entirely by medical people.—I should think you could rely on the Medical Research Council to set up a body about the impartiality of which no reasonable man would have any doubt.

Replying further to Lord ELIBANK, the witness said he thought the essential point of the inquiry would be the validity or otherwise of the claim of the osteopaths. What followed on that would depend on the decision on the essential point. Pending an inquiry, if the osteopaths wished to differentiate those of their members who were very reliable, they could do what the members of other arts had done, and set up their own register.

Lord ELIBANK : You would recommend that ?—WITNESS : I neither recommend it nor disapprove it but if I was an osteopath that is what I should do.

ATTITUDE OF THE MINISTRY

In reply to Mr. THORPE, counsel for the promoters, the witness said the Ministry of Health recommended an organised and careful scientific inquiry, but it was perfectly neutral on the question whether there was a claim or not.

There is some prima facie evidence which justifies you in putting that forward ? You do not recommend inquiries unless there is something to be inquired into ?—There have been various Bills proposed on this question over a certain number of years and the Ministry has been called often to express such judgment as it could on the issue. We thought the time had come to have such an inquiry.

You have had no assistance from the official medical profession ?—There are medical men on the establishment of the Ministry of Health, and obviously before this memorandum was written the advice of those medical men was taken.

If there was some good in osteopathy your department need not look askance at it because it would involve additional administrative burdens ?—It would be for the department to do whatever was required of it. Assuming that there is something in the theory and practice of osteopathy, you have to consider whether that should not be superimposed on the medical curriculum. There are other ways of doing it in which administration would be more simple.

In reply to Mr. DICKENS, on behalf of the British Medical Association, the witness said the department had never asked the medical profession for assistance in ascertaining whether there was anything in the practice and theory of osteopathy. The British Medical Association would be called upon in the ordinary course to give evidence at the proposed inquiry but would not be called upon to give financial assistance. He should himself feel it necessary to get more clarity into the Bill. If this practice was to be differentiated from others the definition would not satisfy him. There would be difficulty if they came to administer it.

There are a great number of people who desire treatment by osteopaths. Do you conceive it possible that if osteopaths were placed on a register it would be impossible to refuse their services as part of the State machinery in connexion with national health ?—I think it would be quite impossible.

In other words an osteopath panel would have to exist side by side with medical panels ?—That is so.

The witness added that if they had the setting up of this register they would have to envisage giving the same privileges to a person on the one register as to a person on the other register.

Supposing a register of osteopaths was granted, without any preliminary investigation and without the claim of osteopathic theory having made good, as osteopaths sought to be done by this Bill, could you see any reason why a similar register should be refused to believers in other forms of treatment—chiropractors, Christian scientists, nature curers, and so on ?—If you give this inquiry you obviously strengthen the claim of other artists to similar treatment.

Memorandum from the Registrar-General

Accompanying the memorandum of the Ministry of Health was a supplementary memorandum from the Registrar-General taking exception to the provisions in Clause 7 (2) of the Bill empowering certain classes of registered osteopaths (*a*) "to sign certificates of birth"; (*b*) "to certify the cause of death"; and (*c*) "to sign certificates of death." The Registrar-General finds the Bill does not make clear its intention under (*a*) and (*c*), but under (*b*) important public interests are involved. The medical certificate of cause of death is the foundation of two separate systems contributing to the national welfare, both of great value to the community.

CERTIFICATION OF THE CAUSE OF DEATH

In the first place this certificate is the only means by which deaths attended by specific features needing investigation or inviting suspicion can, as a matter of routine machinery, be linked up with the scheme of public safety embodied in the coroners' system. It is the registrar's duty to report to the coroner, not only deaths of which the causes are wholly uncertified, but also every death of which the certified cause discloses any one of a series of prescribed indications bearing upon the presence of industrial diseases, the prevalence of particular kinds of accident or the possibility of some form of crime or violence. The efficiency of this system depends entirely upon the quality of the material on which it relies.

Secondly, this certificate is the raw material of the extensive body of medico-statistical (mortality) intelligence which plays so important a part in the promotion of the public health. It is hardly too much to say that there is no question or problem, either of health administration or of research into the causation of disease, in which these statistics do not form at least an indispensable background, if not a source of actual illumination. In this instance, also, a great deal depends upon the quality of the certificates, and thus upon the judgment, training, and experience of the practitioners whose conclusions they express.

NO MARGIN OF EFFICIENCY CAN BE GIVEN AWAY

The position, the Registrar-General concludes, accordingly stands thus. The paramount consideration is the quality of the certificates of cause of death; too much depends upon them to permit of any risks being taken in this respect for the sake of improving the position of a particular class of practitioners. If the provisions of the Bill, in fact, secured that the practitioners to whom it entrusts the function of certifying were as a class not inferior to the present class of registered medical practitioners, either in the possession of a trained judgment or in the breadth and extent of their professional education, no question could of course arise. But nothing less will serve. The certification of cause of death is not a simple matter. The standard already reached is still very far from perfection; and the responsible authorities recognise that improvement is desirable and are continually seeking to achieve it. There is thus no margin of efficiency which can be given away—no handicap which can be safely accepted. No opinion is or can be expressed in this memorandum as to the curriculum embodied in the Bill or as to the standard of competence which would be ensured by the provisions of the Bill as a whole in the body of practitioners whom it permits to certify. But in principle the touchstone is a simple one. Unless the new class of certifying practitioners is as fully equipped as the present class of registered medical practitioners in all those respects of training and experience which go to form a sound opinion of the causation of death, their admission must result in prejudice to the important public interests served by these certificates in regard to both public safety and medico-statistics.

Mr. Vivian examined

Mr. S. P. VIVIAN, the Registrar-General, then gave evidence in support of the memorandum submitted by him. He said it was desirable that the practitioners who furnished certificates of death should not be less qualified in regard to theories and practice, which formed the capacity to form a judgment, than the present medical profession. He attached considerable importance to the certificate of death. Not only was there the maintenance of security, but death certificates entered into medical surveys and statistics. The medical profession had agreed upon a catalogue of fatal diseases capable of the classification of mortality. If osteopaths were led to say spinal disease or something which came entirely outside present considerations that would involve a different view of the causes of disease and of death, and would have a very important effect on the value of statistics.

THE CHAIRMAN: *In the event of the Bill going through there would have to be some concordat arrived at whereby the two classes of practitioner must have some agreement as to the causes of death ?*—WITNESS: If that was possible. We want exact statements in the statistics.

You look to death certificates to provide material for further investigation ?—Yes. I had not heard that proposals are put forward to leave out the clause which deals with the certification of the cause of death but we thought it necessary to put those views on record.

Mr. THORPE: *No osteopath has ever said that a person died of a spinal lesion ?*—I do not know that. I take it from you. At present there is an exhaustive catalogue of diseases which is agreed upon by the medical profession of the country.

Mr. Elmslie examined

Mr. REGINALD C. ELMSLIE, surgeon in charge of the orthopædic department of St. Bartholomew's Hospital, in reply to Mr. JENKINS, counsel for the Royal Colleges, said that he and his colleagues on the council of the Royal College of Surgeons of England objected to the establishment of an osteopaths' register because it seemed impossible within a reasonable time to arrange for osteopathic training in any way equivalent to the education of the medical practitioner, and also because manipulative treatment—which might be dangerous in the hands of persons insufficiently trained in diagnosis —was already widespread, and available when required. He classified osteopaths in three groups. First were those with a medical qualification: nobody would take exception to their registration, but there were only five in this country. Secondly came those who had taken a diploma in osteopathy in this country, and he thought, from the account given to the Committee, that the training at the British School of Osteopathy would not justify their being included in a register. The third group were those trained in American colleges—some of them acceptable to the British Association of Osteopaths and some not. The witness did not see how a line could be drawn between minor and major surgical operations and maintained that a knowledge of major surgery was essential to diagnosis. Any one who was going to use manipulative treatment ought also to be educated in obstetrics and gynæcology. He did not think a system of education for osteopaths comparable to that available for medical students could be set up in less than five or even ten years.

According to osteopathy, Mr. Elmslie continued, manipulation of the spine might have a general effect. For instance, disease of the foot might require manipulation of the spine. But in all general diseases it was irrational to treat by manipulation a part which had no physiological association with the disease. The osteopath did not take the steps to arrive at an accurate diagnosis that would be taken by the medical man. If osteopathy was a complete system of healing, based on new theories of disease, then every osteopath should have a qualification which was given to every medical man. If it was a system of manipulative treatment it ought to be an ancillary treatment. The witness went on to describe the position of the Chartered Society of Massage and Medical Gymnastics which illustrated, he said, how a party of professional people, keeping to strict rule, could get its own organisation without having any State protection at all.

In cross-examination by Mr. Thorpe for the promoters of the Bill, Mr. Elmslie said that a great deal of what is described as osteopathy is founded on manipulative surgery.

Counsel: You said the osteopathic educational standard was not high enough. Would it not be desirable that people who have reached a high standard should be registered?—Witness: Yes.

Counsel: Then what *is* your real objection to the proposals of this Bill?—Witness: That register would consist of five names.

Counsel: You say they would not be qualified unless they were qualified as doctors?—Witness: Of the people whom it is proposed to register there are five who I know have the qualifications.

Counsel: Supposing osteopaths say that a great deal of the education does not help them in the practice of osteopathy?—Witness: If they did say so I should criticise it very strongly.

Mr. Souttar's Evidence

Mr. H. S. Souttar, also a member of the council of the College of Surgeons, and chairman of the Representative Body of the B.M.A., described in some detail the clinical side of the medical student's training. This was something more than a schedule, he said, and an essential part of it was that the student must have at his disposal a very large organisation. Without such facilities it was impossible in his opinion to become a doctor. At the root of the objection to the registration of osteopaths, however, was another feeling—namely, that osteopathy was essentially fraudulent. A statement was made for which no foundation whatever could be produced —no tangible foundation at all—and on that statement a whole system was built and men achieved their own advancement and remuneration. This statement that a small bone in the spine was out of place was absolute nonsense. It seemed to be generally accepted as a basis of osteopathy that all disease was due to small displacements of the spine. But there was no evidence in favour of this view, and to continue to make that statement without evidence was to expose oneself to a charge of fraud. That was the difficulty in the recognition of osteopathy. Five years' training would not make the slightest difference.

At this stage in the witness's evidence the Committee adjourned.

NOTES ON CURRENT TOPICS

In the House of Lords on April 2nd the Criminal Lunatics (Scotland) Bill was read the third time.

HOUSE OF COMMONS

WEDNESDAY, APRIL 3RD

Yellow Fever on the West Coast of Africa

Colonel Heneage asked the Secretary of State for the Colonies if he had any information to give as to the outbreak of yellow fever on the West Coast of Africa; if the outbreak was now stopped; and if the necessary help from research stations and personnel at home had been promptly forthcoming.—Sir Philip Cunliffe-Lister replied: Yellow fever is endemic among the natives of West Africa, and thus it is not, strictly speaking, correct to refer to an "outbreak of yellow fever." During the past few months cases of yellow fever have been reported from each of the four West African Dependencies. In the Gambia the first case diagnosed as one of yellow fever (European) proved fatal on Oct. 6th, 1934, and later three other Europeans also succumbed, among whom were Mr. Parish, the Colonial Secretary, and Mr. Hamlyn, Assistant Colonial Secretary. Three African cases were also notified, of which one proved fatal. The usual precautions were taken to deal with this situation, and the Island of St. Mary was placed in quarantine. The order declaring the island an infected district was cancelled on Jan. 18th, since when no further cases have been reported. In this connexion, I would refer to a reply which I gave on Dec. 21st. Between Nov. 21st and Jan. 15th five African cases of yellow fever were notified from the Gold Coast, of which two proved fatal. On Dec. 24th it was reported that two Europeans were suffering from yellow fever in Kano, in Northern Nigeria, but both have since recovered. Previous to this, three Europeans had died at Kano, and it is suspected that they were suffering from yellow fever. A number of African cases, of which one proved fatal, were also notified, and the usual precautions were taken to prevent the spread of infection. On Jan. 21st a suspected case of yellow fever, which was later confirmed, was reported from Sierra Leone. The victim in this case was a European who died on Jan. 26th. With regard to the second part of the question, I am able to say that no new cases have occurred since the middle of January. To combat this disease in the Gambia, assistance was obtained in the first place from the Gold Coast and from Sierra Leone. I should like to take this opportunity of expressing my thanks, and the gratitude of the Government of the Gambia, to Dr. Howells of the Gold Coast, and to Dr. Davey and Dr. Duncan of Sierra Leone, for the zeal and energy with which they handled a difficult situation, and to the Wellcome Research Institution, who kindly gave permission for Dr. G. M. Findlay to visit Bathurst in order to conduct inoculations against yellow fever. The Governor reports that "apart from the inoculations (152 persons in all were successfully inoculated) Dr. Findlay worked tirelessly, investigating the cause and extent of the outbreak, and also gathering a mass of data relating to the incidence of yellow fever and other diseases for scientific examination in London. It would be difficult to express our thanks too warmly or to exaggerate the importance to West Africa of the conclusions to be drawn from his work here."

THURSDAY, APRIL 4TH

Re-pasteurisation of Milk

Major Mills asked the Minister of Health if he was aware that some distributors of milk collected milk at country depôts at considerable distances from London and pasteurised it there; that they then transported it to London in bulk and pasteurised it again to nullify the effects of contamination and deteriorisation before bottling it for distribution; and whether he was satisfied that this second pasteurisation was a desirable practice in the interests of the health of the consumers.—Mr. Shakespeare replied: My right hon. friend is advised that it is undesirable that milk should be heat-treated more than once, and he was not aware that this procedure is adopted at the present time. It is one of the conditions of the sale of milk as "pasteurised" that the milk should not be heated more than once, and if my hon. friend will supply any evidence of an infringement of this condition my right hon. friend will bring it to the notice of the appropriate local authority.

Malnutrition in Durham

Mr. Batey asked the Minister of Health what action he proposed to take on the report made on behalf of the President of the Board of Education and himself regarding the condition of children suffering from malnutrition in the county of Durham; and whether it was intended to publish the report.—Mr. Shakespeare replied: This report is now being printed with a view to publication. The question of any action to be taken on the findings in the report is under consideration.

Accident Proneness of Motorists

Captain Erskine-Bolst asked the Minister of Transport whether any date had been fixed for the conference between motor insurance experts and representatives of the Medical Research Council to discuss the accident-proneness of motorists; and if he can state exactly what the agenda at this conference would be.—Mr. Hore-Belisha replied: Arrangements have been made for a conference to be held at the end of this week between representatives of the Medical Research Council and of Authorised Insurers for informal discussion of the paragraphs in the report of the Medical Research Council (Cmd. 4796) which deal with Accident-Proneness and Road Dangers.

MONDAY, APRIL 8TH

Price of Milk to Institutions in Scotland

Mr. Burnett asked the Secretary of State for Scotland whether he was yet in a position to make a statement as to the conclusions of the committee of investigation for Scotland regarding the price of milk to institutions which was the subject of a report of the Consumers' Committee.—Sir G. Collins replied: I have received the Committee's report, which is under consideration. The committee find that to the extent that local authorities and voluntary hospitals within the area of the Scottish Milk Scheme are now required to pay substantially more for their supplies of milk than they paid before the inauguration of the scheme, the price scale determined by the Board, and their action in giving effect to it may be regarded as contrary to the interests of the said local authorities and voluntary hospitals. With respect to the question whether the determination of the Board in this matter was not in the public interest, the committee find themselver unable to give an unqualified answer. The committee see no justification for the argument that because prior to the scheme a consumer was in a position, owing to the conditions then prevailing, of securing milk at less than economic rates, that fact should be regarded as a reason for fixing lower prices now that the scheme is in operation. The committee also have no hesitation in deciding that the beneficent nature of the work carried out by the local authorities and the voluntary hospitals does not in itself justify a claim to obtain their supplies of milk under the scheme at less than a reasonable price. On the other hand, the committee point out that it would be an unfortunate sequel to the scheme if the consumption of Grade A (T.T.) milk were abandoned to any extent in hospitals or in rate-supported institutions in favour of ordinary milk, and equally unfortunate if the consumption of milk, of whatever grade, were to be reduced. This consideration, coupled with the facts that the institutions are large consumers and do not purchase for trading purposes or for sale at a profit, that there is little expense involved in handling or distribution, and that there is no risk of any bad debts being made by the sellers, suggests to the committee that there is a case for exceptional treatment of these institutions in certain directions. In so far as these institutions have not received such treatment owing to the action of the Board, such action may be said to be not in the public interest.

Dangers of another Drought

Mr. Cleary asked the Minister of Health what steps were being taken to safeguard the country against the dangers of another possible drought.—Mr. Shakespeare replied: The average total rainfall for the country as a whole for the six months ended March 31st last, the critical months for the replenishment of water supplies, was above the normal, and urban water undertakers generally are in a good position. Should the necessity arise, powers are available to them to obtain additional water supplies with despatch under the Water Supplies (Exceptional Shortage Orders) Act, 1934, which remains in force until the end of the present year. The primary need in the rural areas is for permanent supplies. Good progress is being made under the Act of last year, and the total capital cost of schemes for which State grants have been provisionally allccated is now £3,200,000 for schemes in 1100 parishes.

TUESDAY, APRIL 9TH

Certified and Grade A (T.T.) Milk in Scotland

The Duchess of Atholl asked the Secretary of State for Scotland if he could now intimate the decision of the investigating committee in regard to the complaint made by the Association of Certified and Grade A (T.T.) Milk Producers in regard to the Scottish Milk Marketing Scheme.—The Lord Advocate replied: The findings of the committee were announced in reply to a question on Feb. 20th. An Order will now be made to give effect to the proposal that the contribution payable in respect of certified milk sold as such should be at the rate of one half-penny a gallon, with retrospective effect as from May 1st, 1934.

Medical Requirements on Renewal of Air Licences

Mr. Everard asked the Under-Secretary of State for Air whether the recommendation of the Gorell Committee on the subject of the medical requirements on the renewal of B licences by captains of large air-liners had been put into effect.—Sir P. Sassoon replied: The Air Ministry is prepared to put this recommendation into effect in appropriate cases.

Supply of Milk in Nursery Schools

Mr. Smedley Crooke asked the Parliamentary Secretary to the Board of Education what proportion of the nursery schools in the country were regarded as full-time schools and so eligible to receive milk at reduced rates.—Mr. Ramsbotham replied: All the 61 nursery schools recognised for grant by the Board of Education are regarded as full-time schools, and are eligible to participate in the scheme for the supply of milk at reduced rates. I have no information as to the number of unrecognised nursery schools, and am therefore unable to state the proportion of the grant-earning schools to the total number of schools which might be regarded as nursery schools.

Health Insurance Rights

Mr. Sutcliffe asked the Minister of Health whether his attention had been called to the number of cases in which insured persons lost the entire amount of their contributions over a long period of years owing to the fact that shortly before attaining the age of 65 they started some small business of their own; and whether, when they ceased to be insured employees, their approved societies notified them that they could preserve their rights by continuing as voluntary contributors.—Mr. Shakespeare replied: My right hon. friend is aware that every half-year a number of persons, after having been insured for a period of years as employed contributors, take up business on their own account, and after a free period of insurance of about 21 months can only retain their rights under the schemes of health insurance and contributory pensions by becoming voluntary contributors. Approved societies have been instructed to inform their members of the position, and my right hon. friend has no reason to think that they fail to do so.

Middlesex Hospital.—The new buildings of Middlesex Hospital are to be opened by the Duke of York on May 29th. He will be accompanied by the Duchess.

Kent and Sussex Hospital.—Criticism which had been levelled against the governors of the Kent and Sussex Hospital, Tunbridge Wells, in spending a sum of £188,422—£200,000 was the original approximate figure—on the erection of a new building on the Great Culverden site, was largely dispelled at the first annual meeting held at the hospital on March 21st. Incorporated in the new building are the Tunbridge Wells General Hospital, the parent institution founded 107 years ago, the Eye and Ear Hospital, and the Kent and Sussex Hospital, and as a whole is now known as the Kent and Sussex Hospital. The building has accommodation for 204 patients, and recently no fewer than 202 beds were in occupation on one day, giving an answer to the suggestion that the governors were not justified in providing for such a number. Furthermore, there is accommodation for 18 private patients, and as many as 14 have already been occupied at one time. Naturally, with the occupation of a new hospital, expenditure had been heavy, and equipment cost more than had been estimated, but the amount in excess of income was met by a number of legacies. The building fund marked an overdraft at the bank of £23,000, but there were the proceeds of the sale of the old General Hospital and site still to be realised.

of healing, based on new theories of disease, then every osteopath should have a qualification which was given to every medical man. If it was a system of manipulative treatment it ought to be an ancillary treatment. The witness went on to describe the position of the Chartered Society of Massage and Medical Gymnastics which illustrated, he said, how a party of professional people, keeping to strict rule, could get its own organisation without having any State protection at all.

In cross-examination by Mr. Thorpe for the promoters of the Bill, Mr. Elmslie said that a great deal of what is described as osteopathy is founded on manipulative surgery.

COUNSEL: You said the osteopathic educational standard was not high enough. Would it not be desirable that people who have reached a high standard should be registered ?—WITNESS: Yes.

COUNSEL: Then what is your real objection to the proposals of this Bill ?—WITNESS: That register would consist of five names.

COUNSEL: You say they would not be qualified unless they were qualified as doctors ?—WITNESS: Of the people whom it is proposed to register there are five who I know have the qualifications.

COUNSEL: Supposing osteopaths say that a great deal of the education does not help them in the practice of osteopathy ?—WITNESS: If they did say so I should criticise it very strongly.

Mr. Souttar's Evidence

Mr. H. S. SOUTTAR, also a member of the council of the College of Surgeons, and chairman of the Representative Body of the B.M.A., described in some detail the clinical side of the medical student's training. This was something more than a schedule, he said, and an essential part of it was that the student must have at his disposal a very large organisation. Without such facilities it was impossible in his opinion to become a doctor. At the root of the objection to the registration of osteopaths, however, was another feeling—namely, that osteopathy was essentially fraudulent. A statement was made for which no foundation whatever could be produced —no tangible foundation at all—and on that statement a whole system was built and men achieved their own advancement and remuneration. This statement that a small bone in the spine was out of place was absolute nonsense. It seemed to be generally accepted as a basis of osteopathy that all disease was due to small displacements of the spine. But there was no evidence in favour of this view, and to continue to make that statement without evidence was to expose oneself to a charge of fraud. That was the difficulty in the recognition of osteopathy. Five years' training would not make the slightest difference.

At this stage in the witness's evidence the Committee adjourned.

NOTES ON CURRENT TOPICS

In the House of Lords on April 2nd the Criminal Lunatics (Scotland) Bill was read the third time.

HOUSE OF COMMONS

WEDNESDAY, APRIL 3RD

Yellow Fever on the West Coast of Africa

Colonel HENEAGE asked the Secretary of State for the Colonies if he had any information to give as to the outbreak of yellow fever on the West Coast of Africa; if the outbreak was now stopped; and if the necessary help from research stations and personnel at home had been promptly forthcoming.—Sir PHILIP CUNLIFFE-LISTER replied: Yellow fever is endemic among the natives of West Africa, and thus it is not, strictly speaking, correct to refer to an "outbreak of yellow fever." During the past few months cases of yellow fever have been reported from each of the four West African Dependencies. In the Gambia the first case diagnosed as one of yellow fever (European) proved fatal on Oct. 6th, 1934, and later three other Europeans also succumbed, among whom were Mr. Parish, the Colonial Secretary, and Mr. Hamlyn, Assistant Colonial Secretary. Three African cases were also notified, of which one proved fatal. The usual precautions were taken to deal with this situation, and the Island of St. Mary was placed in quarantine. The order declaring the island an infected district was cancelled on Jan. 18th, since when no further cases have been reported. In this connexion, I would refer to a reply which I gave on Dec. 21st. Between Nov. 21st and Jan. 15th five African cases of yellow fever were notified from the Gold Coast, of which two proved fatal. On Dec. 24th it was reported that two Europeans were suffering from yellow fever in Kano, in Northern Nigeria, but both have since recovered. Previous to this, three Europeans had died at Kano, and it is suspected that they were suffering from yellow fever. A number of African cases, of which one proved fatal, were also notified, and the usual precautions were taken to prevent the spread of infection. On Jan. 21st a suspected case of yellow fever, which was later confirmed, was reported from Sierra Leone. The victim in this case was a European who died on Jan. 26th. With regard to the second part of the question, I am able to say that no new cases have occurred since the middle of January. To combat this disease in the Gambia, assistance was obtained in the first place from the Gold Coast and from Sierra Leone. I should like to take this opportunity of expressing my thanks, and the gratitude of the Government of the Gambia, to Dr. Howells of the Gold Coast, and to Dr. Davey and Dr. Duncan of Sierra Leone, for the zeal and energy with which they handled a difficult situation, and to the Wellcome Research Institution, who kindly gave permission for Dr. G. M. Findlay to visit Bathurst in order to conduct inoculations against yellow fever. The Governor reports that "apart from the inoculations (152 persons in all were successfully inoculated) Dr. Findlay worked tirelessly, investigating the cause and extent of the outbreak, and also gathering a mass of data relating to the incidence of yellow fever and other diseases for scientific examination in London. It would be difficult to express our thanks too warmly or to exaggerate the importance to West Africa of the conclusions to be drawn from his work here."

THURSDAY, APRIL 4TH

Re-pasteurisation of Milk

Major MILLS asked the Minister of Health if he was aware that some distributors of milk collected milk at country depôts at considerable distances from London and pasteurised it there; that they then transported it to London in bulk and pasteurised it again to nullify the effects of contamination and deteriorisation before bottling it for distribution; and whether he was satisfied that this second pasteurisation was a desirable practice in the interests of the health of the consumers.—Mr. SHAKESPEARE replied: My right hon. friend is advised that it is undesirable that milk should be heat-treated more than once, and he was not aware that this procedure is adopted at the present time. It is one of the conditions of the sale of milk as "pasteurised" that the milk should not be heated more than once, and if my hon. friend will supply any evidence of an infringement of this condition my right hon. friend will bring it to the notice of the appropriate local authority.

Malnutrition in Durham

Mr. BATEY asked the Minister of Health what action he proposed to take on the report made on behalf of the President of the Board of Education and himself regarding the condition of children suffering from malnutrition in the county of Durham; and whether it was intended to publish the report.—Mr. SHAKESPEARE replied: This report is now being printed with a view to publication. The question of any action to be taken on the findings in the report is under consideration.

Accident Proneness of Motorists

Captain ERSKINE-BOLST asked the Minister of Transport whether any date had been fixed for the conference between motor insurance experts and representatives of the Medical Research Council to discuss the accident-proneness of motorists: and if he can state exactly what the agenda at this conference would be.—Mr. HORE-BELISHA replied: Arrangements have been made for a conference to be held at the end of this week between representatives of the Medical Research Council and of Authorised Insurers for informal discussion of the paragraphs in the report of the Medical Research Council (Cmd. 4796) which deal with Accident-Proneness and Road Dangers.

MONDAY, APRIL 8TH

Price of Milk to Institutions in Scotland

Mr. BURNETT asked the Secretary of State for Scotland whether he was yet in a position to make a statement as to the conclusions of the committee of investigation for Scotland regarding the price of milk to institutions which was the subject of a report of the Consumers' Committee.—Sir G. COLLINS replied: I have received the Committee's report, which is under consideration. The committee find that to the extent that local authorities and voluntary hospitals within the area of the Scottish Milk Scheme are now required to pay substantially more for their supplies of milk than they paid before the inauguration of the scheme, the price scale determined by the Board, and their action in giving effect to it may be regarded as contrary to the interests of the said local authorities and voluntary hospitals. With respect to the question whether the determination of the Board in this matter was not in the public interest, the committee find themselver unable to give an unqualified answer. The committee see no justification for the argument that because prior to the scheme a consumer was in a position, owing to the conditions then prevailing, of securing milk at less than economic rates, that fact should be regarded as a reason for fixing lower prices now that the scheme is in operation. The committee also have no hesitation in deciding that the beneficent nature of the work carried out by the local authorities and the voluntary hospitals does not in itself justify a claim to obtain their supplies of milk under the scheme at less than a reasonable price. On the other hand, the committee point out that it would be an unfortunate sequel to the scheme if the consumption of Grade A (T.T.) milk were abandoned to any extent in hospitals or in rate-supported institutions in favour of ordinary milk, and equally unfortunate if the consumption of milk, of whatever grade, were to be reduced. This consideration, coupled with the facts that the institutions are large consumers and do not purchase for trading purposes or for sale at a profit, that there is little expense involved in handling or distribution, and that there is no risk of any bad debts being made by the sellers, suggests to the committee that there is a case for exceptional treatment of these institutions in certain directions. In so far as these institutions have not received such treatment owing to the action of the Board, such action may be said to be not in the public interest.

Dangers of another Drought

Mr. CLEARY asked the Minister of Health what steps were being taken to safeguard the country against the dangers of another possible drought.—Mr. SHAKESPEARE replied: The average total rainfall for the country as a whole for the six months ended March 31st last, the critical months for the replenishment of water supplies, was above the normal, and urban water undertakers generally are in a good position. Should the necessity arise, powers are available to them to obtain additional water supplies with despatch under the Water Supplies (Exceptional Shortage Orders) Act, 1934, which remains in force until the end of the present year. The primary need in the rural areas is for permanent supplies. Good progress is being made under the Act of last year, and the total capital cost of schemes for which State grants have been provisionally allocated is now £3,200,000 for schemes in 1100 parishes.

TUESDAY, APRIL 9TH

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The Duchess of ATHOLL asked the Secretary of State for Scotland if he could now intimate the decision of the investigating committee in regard to the complaint made by the Association of Certified and Grade A (T.T.) Milk Producers in regard to the Scottish Milk Marketing Scheme.—The Lord ADVOCATE replied: The findings of the committee were announced in reply to a question on Feb. 20th. An Order will now be made to give effect to the proposal that the contribution payable in respect of certified milk sold as such should be at the rate of one half-penny a gallon, with retrospective effect as from May 1st, 1934.

Medical Requirements on Renewal of Air Licences

Mr. EVERARD asked the Under-Secretary of State for Air whether the recommendation of the Gorell Committee on the subject of the medical requirements on the renewal of B licences by captains of large air-liners had been put into effect.—Sir P. SASSOON replied: The Air Ministry is prepared to put this recommendation into effect in appropriate cases.

Supply of Milk in Nursery Schools

Mr. SMEDLEY CROOKE asked the Parliamentary Secretary to the Board of Education what proportion of the nursery schools in the country were regarded as full-time schools and so eligible to receive milk at reduced rates.—Mr. RAMSBOTHAM replied: All the 61 nursery schools recognised for grant by the Board of Education are regarded as full-time schools, and are eligible to participate in the scheme for the supply of milk at reduced rates. I have no information as to the number of unrecognised nursery schools, and am therefore unable to state the proportion of the grant-earning schools to the total number of schools which might be regarded as nursery schools.

Health Insurance Rights

Mr. SUTCLIFFE asked the Minister of Health whether his attention had been called to the number of cases in which insured persons lost the entire amount of their contributions over a long period of years owing to the fact that shortly before attaining the age of 65 they started some small business of their own; and whether, when they ceased to be insured employees, their approved societies notified them that they could preserve their rights by continuing as voluntary contributors.—Mr. SHAKESPEARE replied: My right hon. friend is aware that every half-year a number of persons, after having been insured for a period of years as employed contributors, take up business on their own account, and after a free period of insurance of about 21 months can only retain their rights under the schemes of health insurance and contributory pensions by becoming voluntary contributors. Approved societies have been instructed to inform their members of the position, and my right hon. friend has no reason to think that they fail to do so.

MIDDLESEX HOSPITAL.—The new buildings of Middlesex Hospital are to be opened by the Duke of York on May 29th. He will be accompanied by the Duchess.

KENT AND SUSSEX HOSPITAL.—Criticism which had been levelled against the governors of the Kent and Sussex Hospital, Tunbridge Wells, in spending a sum of £188,422—£200,000 was the original approximate figure—on the erection of a new building on the Great Culverden site, was largely dispelled at the first annual meeting held at the hospital on March 21st. Incorporated in the new building are the Tunbridge Wells General Hospital, the parent institution founded 107 years ago, the Eye and Ear Hospital, and the Kent and Sussex Hospital, and as a whole is now known as the Kent and Sussex Hospital. The building has accommodation for 204 patients, and recently no fewer than 202 beds were in occupation on one day, giving an answer to the suggestion that the governors were not justified in providing for such a number. Furthermore, there is accommodation for 18 private patients, and as many as 14 have already been occupied at one time. Naturally, with the occupation of a new hospital, expenditure had been heavy, and equipment cost more than had been estimated, but the amount in excess of income was met by a number of legacies. The building fund marked an overdraft at the bank of £23,000, but there were the proceeds of the sale of the old General Hospital and site still to be realised.

drugs. This point is one of many that calls for consideration in determining the relationship between man's two trypanosomes. At the moment, the two main views on this problem are either that *T. rhodesiense* is a variant of *T. gambiense*, or that it is a *T. brucei* that is pathogenic to man. The matter is still unsettled. According to the latter view, *T. gambiense* in its typical "human" form, in the course of ages and among several other changes from the *brucei* type, may have acquired sensitiveness to arsenic, a peculiarity which it readily loses again.

It should be remembered that no one, so far as is revealed by the literature at my disposal at the moment of writing, has yet succeeded in preparing from a *T. gambiense* really sensitive to arsenic a strain resistant to arsenic that at the same time retains its transmissibility by tsetse. It is a pity to lose sight altogether of this aspect of the phenomenon of arsenic resistance, academic though it may be, and automatically to ascribe any resistance possessed by *T. gambiense* when first isolated from man to previous contact with arsenical drugs.

I am, Sir, yours faithfully,
H. LYNDHURST DUKE.

Human Trypanosomiasis Institute, Uganda, March 5th.

ERGOMETRINE

To the Editor of THE LANCET

SIR,—The interest aroused by the recent announcement of the discovery of the new water-soluble alkaloid of ergot (ergometrine) by Dudley and Chassar Moir will probably have made some obstetricians wishful to try the clinical use of a substance of such high promise.

By the application of the published details of the methods employed by the above-mentioned workers, the scientific staff of this company has already prepared some ergometrine with a view to its production on an industrial scale; and I write to state that a sample tube of tablets each containing 0·5 mg. of ergometrine will be sent without charge to any obstetrician who applies.

I am, Sir, yours faithfully,
CHARLES ALEX. HILL,
Chairman and Managing Director,
The British Drug Houses Ltd.

Graham-street, N., April 1st.

PHYSICAL CULTURE FOR MENTAL PATIENTS

To the Editor of THE LANCET

SIR,—In your issue of Feb. 16th (p. 407) you reported a discussion introduced by Lord Kilmaine in the House of Lords on physical culture for mental patients. For some years physical culture has formed part of the treatment at this hospital, which to-day possesses an up-to-date gymnasium, the equipment of which includes, among other things, parallel bars, bridge ladders, Roman rings, trapeze, rope ladders, rowing machines, pulley weights, punching ball and sack, Terry's chest expanders, auxiliary expanders and developers, and Sandow's spring dumb-bells. Every morning from 7 to 7.30 all the younger patients, male and female, attend the gymnasium for massed physical exercises under a qualified instructor. This is followed by community singing for half an hour. From 8.30 till 11.30 A.M. batches of patients leave the occupational therapy department to attend the gymnasium for half-hourly periods, when specialised physical culture is studied. At these classes the patients show keen coöperation. The subjects included in the special classes are Indian club swinging, diving and vaulting over a human horse, skipping, boxing, dumb-bell exercises, human pyramids, fencing (with wooden swords), living statuary, acrobatic stunts, Jiu-jitsu, wrestling, and tableaux. A high standard of efficiency is reached and at all the hospital concerts at least two turns by the physical culture classes are included in the programme.

I am, Sir, yours faithfully,
MOORE TAYLOR,
Major, I.M.S.

Ranchi European Mental Hospital, Bihar and Orissa, India, March 13th.

CANNABIS INDICA

To the Editor of THE LANCET

SIR,—Will you allow me to correct an inaccuracy which occurs in an article describing a case of cannabis indica intoxication in your last issue. Dr. Baker-Bates states (p. 811) "there is no law against the possession of or smoking of the plant." This is not the case. The Coca Leaves and Indian Hemp Regulations, 1928 (S.R. & O. 1928, No. 982), apply to Indian hemp the provisions of the Raw Opium Regulations, 1921 (S.R. & O. 1921, No. 864), and it is accordingly an offence for any person (unless he is licensed or otherwise authorised to do so) to be in possession of or attempt to obtain possession of Indian hemp.

I am, Sir, yours faithfully,
WM. H. COLES,
Chief Inspector under the Dangerous Drugs Acts.

Home Office, Whitehall, April 9th.

STERILITY FOLLOWING SYMPATHECTOMY

To the Editor of THE LANCET

SIR,—In his valuable paper in THE LANCET of April 6th Dr. Arthur Hurst stresses the frequency with which sterility follows sympathectomy in male patients, and reports two cases where marked neurosis resulted from failure to warn the patient before operation of this disability. But, in suggesting that similar sex complications may occur in women, Dr. Hurst makes a statement that cannot remain unchallenged. He states that "as most of the females upon whom the operation" (i.e., presacral neurectomy) "has hitherto been performed have been elderly women in whom the sexual functions are already in abeyance, it is still possible that these functions may be seriously impaired if the operation is performed in girls and young women."

Both the fact and the corollary contained in this statement are curiously incorrect. The operation was originally designed for the relief of dysmenorrhœa and this disorder still remains its predominant indication. Consequently, most of the patients have been girls or young women: for example, the average age in my own series, which include several cases of carcinoma of the cervix and late pelvic neuralgia, is 28, and Cotte's larger series gives a similar figure. All these cases have now been observed for some years, several of them through subsequent pregnancies, and in not a single one has there been noticed any aberration of the sexual function (with the exception of some increase in sex feeling). Coitus, conception, pregnancy, and parturition remain unaffected by the operation, and there are no untoward effects on either bladder or rectum.

Cases of true intractable dysmenorrhœa, by which I mean those in which all medical and minor surgical treatments have failed to relieve, are admittedly uncommon, but it is in these very cases that sympathectomy is so brilliantly successful; it is therefore particularly unfortunate that a physician of Dr. Hurst's eminence and authority should propagate such a damaging misconception of the possible sequelæ of this operation. I entirely agree with him that sympathectomies are performed too often and with too little justification; but I must again emphasise the fact that resection of the presacral nerve in women, when properly performed for proper indications, has no deleterious effect on the sex functions, including that of conception, and is generally productive of nothing but good results.—I am, Sir, yours faithfully,

Harley-street, W., April 9th. A. A. DAVIS.

SIR JOHN ROSE BRADFORD

To the Editor of THE LANCET

SIR,—The obituary notice in the *Times*, contributed by Sir Humphry Rolleston, reminds me of an interesting piece of prophecy in which Bradford and Rolleston were associated. Somewhere about 1895—40 years ago—I was sub-editing the *Practitioner* and had designed a "monthly review of the medical sciences," in which a special department was reviewed each month by one of the rising young physicians of those days. Bradford was responsible for Diseases of the Kidneys and Rolleston for Diseases of the Digestive Tract. One morning they were both in my waiting-room, where they met the late Dr. Michael Foster, an old friend of mine from San Remo and Harrogate. He came into my study first and said, "I won't keep you long as you have two men in the waiting-room whom I know. Mark my words—they are both future presidents of the Royal College of Physicians." Sir Humphry Rolleston was elected president in 1922, and Sir John Rose Bradford succeeded him in 1926.

Bradford was an excellent organiser of congresses. The tercentenary celebration of the publication of Harvey's "De motu cordis" was primarily, if not entirely, a College affair and was a great success. When the centenary of the birth of Lister came round in 1927 it was felt that King's College, University College, London University, the Royal College of Surgeons, and the Universities of Edinburgh and Glasgow were all justified in celebrating their association with the great master. But Bradford had the wise idea of proposing that the Royal Society, of which Lister had been president, was the body to take chief charge of the event. With him as chairman of the executive committee, and Sir Henry Dale as secretary, we remember what a brilliant affair the celebration was. On both these occasions—the publication of Harvey's great work and the birth of Lister—Bradford's wise imagination and excellent conduct added to the reputation of the Royal College which he served so well.

I am, Sir, yours faithfully,

April 9th. ST.C. T.

STRICKLAND GOODALL MEMORIAL

SUGGESTIONS for a memorial to the late Dr. Strickland Goodall reach us in the following communication:—

"Dr. Joseph Strickland Goodall died towards the end of last year at the early age of 59. His memory is revered by many who benefited not only by his skill but also by his great capacity for friendship and by his ungrudging and willing service. He was a man with a large and generous mind. It is therefore desired to perpetuate his memory, and we feel sure that there must be many among his professional colleagues, friends, and patients who would wish to coöperate with us. We are of the opinion that the form of memorial he would have preferred would be a lectureship and medal named after him. This lecture would embrace cardiology in its widest sense. Dr. Strickland Goodall was an examiner for the Society of Apothecaries for many years, and in view of his close association with the company we think it appropriate that the lectureship and medal should be under its auspices. The court of assistants has graciously consented to act as trustee. We should be glad if all those who feel they would like to participate would send their contributions to the treasurer, Strickland Goodall Fund, Westminster Bank, Harley-street, W.1."

The signatories are: Viscountess St. Cyres, Sir Leicester Harmsworth, Sir James Berry, Charles Carpenter, D.Sc., Mr. John Cohen (chairman of the National Heart Hospital), Prof. A. W. Sheen, Prof. J. W. Eyre, Mr. George Joseph, Dr. Russell Reynolds, Dr. Evan Bedford, Mr. Bertram Mendleson, Mr. Lambert Rogers, Dr. Maude Richards, and Dr. Jenner Hoskin.

BRITISH EMPIRE CANCER CAMPAIGN

Lord Reading presided at a meeting of the grand council of the Campaign held in London on Monday last. A grant at the rate of £350 per annum for the year 1935 was made to Sir Leonard Hill for the services of Dr. T. Reiter whilst continuing his research work on short-wave therapy in the laboratories of the St. John Clinic and Institute of Physical Medicine. A grant of £1000 per annum for two years was made to the North of England council of the Campaign, to be placed at the disposal of Prof. W. E. Curtis, of the Armstrong College, Newcastle, and Mr. F. Dickens, D.Sc., research director of the Cancer Research Institute of the North of England council, for conducting an exhaustive scheme of research in short-wave therapy. It was reported that the scientific advisory committee of the Campaign attaches much importance to this research. Further, a grant of £700 was placed at the disposal of the scientific advisory committee for a special investigation of the biological reactions of monochromatic radiations of various wave-lengths.

The grand council adopted the recommendation of its committees that it was desirable to continue to offer from time to time a prize and medal for the best essay submitted on a set subject concerning cancer research. It was decided also that the Campaign should award gold medals from time to time to those in the British Empire who had carried out and published contributions to cancer research of outstanding merit. As a result of representations by members of the provincial branches, the council has established a central propaganda committee. One of its objects will be to issue information which will enlighten the public generally about the onset of cancer, with a view to inducing sufferers to seek medical advice at the earliest possible moment.

It was reported that a largely increased number of centres have undertaken, in the present Jubilee year, to organise collections throughout the country. In the provinces May 25th has been selected for the majority of the 1700 collections, while in London July 9th has been allotted as the flag day for the metropolitan and city areas.

HOVE GENERAL HOSPITAL.—At the annual meeting of the governors on March 26th it was announced that the King's Jubilee will be commemorated by building a Jubilee wing. It will form part of an extension scheme now nearing completion, and will bring the number up of beds from 22 to 50, thus serving the hospital being recognised by the General Nursing Council as a complete training school for nurses. The Mayor of Hove, who presided over the meeting, mentioned that the cost, added to the sum already spent in the extension ward now being carried out, would bring the total sum involved to nearly £34,000. About £20,000 remained to be raised.

OBITUARY

SIR JOHN ROSE BRADFORD, Bt., K.C.M.G., M.D., F.R.C.P.Lond., F.R.S.

LATE PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON

THE death occurred on Sunday last, April 7th, of Sir John Rose Bradford, distinguished physiologist and physician, and indefatigable worker in many important directions of scientific and medical organisation. He died, after a somewhat prolonged illness, in the house in Manchester-square, London, which he had occupied nearly the whole of his professional life. The event occurring a few days after the death of Sharpey-Schafer, his senior by some 12 years, must remind us how these two great men, though absolutely differing in career and performance, stood out as pioneers of the now generally accepted view that all scientific research which is allied to or ancillary to medicine should be brought into association with clinical practice. It was this great ideal in all Rose Bradford's work that made him accepted universally as a leader of the medical profession of particular distinction.

[Photograph by Elliott and Fry

SIR JOHN ROSE BRADFORD

John Rose Bradford was born in London in 1863, the son of Abraham Rose Bradford, Deputy Inspector-General of Hospitals, R.N., by Ellen, daughter of Nicholas Littleton of Saltash. He was educated at a school in France and at University College school and the medical school of University College Hospital, where he entered as a student in 1882, when the staff comprised such notable men as William Jenner, Russell Reynolds, Bastian, Schafer, Gowers, Ringer, and Marcus Beck, the last two of whom were Bradford's particular heroes. He graduated as B.Sc. Lond. in 1883 and as M.B. in 1888, proceeding in the same year to the D.Sc. and in 1889 to the M.D. degree, when he obtained the gold medal for medicine. In 1892 he took the diploma of M.R.C.P. Lond. and was elected F.R.C.P. five years later. He served the house appointments, and was for a time demonstrator of anatomy in the school. In 1890 he became assistant physician to the hospital and was shortly after elected to the same position at the National Hospital, Queen-square, while he served for a period on the staff of the Seamen's Hospital, Greenwich.

Such was the extended clinical field open to Bradford from the start, but he had made a great mark in physiological work before obtaining his first medical degree. He published physiological papers with Bayliss on the electrical phenomena accompanying secretion in 1885 in the *Proceedings* of the Royal Society, and these were followed by contributions to the *Journal of Physiology* on the innervation of the renal blood-vessels and on the action of certain drugs on the kidney. Between 1889 and 1892 he contributed to the *Proceedings* of the Royal Society papers on the innervation of the pulmonary blood-vessels in association with H. P. Dean, and with Bayliss on the innervation of the vessels of the limbs, and in the latter year he wrote in the *Journal of Physiology* a paper on partial nephrectomy and the influence of the kidney on metabolism, while he contributed to the Royal Society a preliminary note on the effect on nitrogenous metabolism of removing portions of the kidney. In recognition of the quality of these researches he was elected F.R.S. in 1894, at an unusually early age.

In 1895 Bradford was elected superintendent of the Brown Institution, where he continued his physiological investigations. He held this post for eight years, and at the beginning of his long association with the Royal College of Physicians he recorded his experiences thereat. For when he was, in 1897, appointed Goulstonian lecturer at the College he took as his subject the pathology of the kidney, and the lectures were founded on work done at the laboratory of the Brown Institution. He traced the results of partial and complete nephrectomies on the general metabolism of the body, and on the composition of the urine, describing in conclusion the phenomena of uræmia as seen clinically. The lectures illustrated his invariable attitude towards the problems of scientific research—any lessons to be learnt from them should be interpreted for the medical profession from the clinical aspect. He had already published an excellent little textbook, entitled "Clinical Lectures on the Urine"; the lectures had appeared in serial form in the *Clinical Journal* and while covering the ground with great clearness and accuracy, brought Bradford's laboratory work actually to the bedside. Indeed all Bradford's contributions to medical literature showed this practical bent. He wrote the articles in Allbutt's "System of Medicine" on the General Pathology of the Renal Functions and on Nephritis, and in Allchin's "Manual of Medicine" those on Rabies, the Mycoses, and Diseases of Ductless Glands. The essays were in each case simple and practical, the results of personal investigations being collated with those of clinical experience, the author's own, and that of much trustworthy authority.

In 1897 Bradford became full physician at University College Hospital, and professor, first of materia medica and later of clinical medicine. In private practice he displayed his great qualities, using a wide range of knowledge and never allowing theoretical considerations to sway practical judgment. His original mind was displayed in clinical medicine as it had been in physiology; and he became a great clinical teacher because his interpretation of the facts of a case was accurate and his presentation of them clear and ordered. He commenced unfolding a case commonly by a few tactful questions asked of a clinical clerk, and the case was finally displayed in a wonderful way, the essential points standing out clearly against a background of less important details. At such times diagnosis seemed very simple and self-evident. Honesty was an essential part of his nature, and strict adherence to the track, as he saw it, characteristic of his discourses, since he taught what he saw in the patient and freely illustrated his statements by reference to cases which had come under his own personal observation. Orderliness and clearness of thought, originality in classification into clinical types, sound judgment, and avoidance of irrelevance were thus characteristic of his teaching. His memory was very retentive and the facts of medicine so precisely and clearly arranged in his mind that he had no need of notes to aid him; in fact he used to say that looking at notes worried him, and when lecturing at University College he went through the whole of medicine without a note of any kind.

His labours in the field of experimental physiology were discontinued after 1899, and his time was fully occupied, apart from work in the wards or the consulting-room, by the numerous public duties which he undertook. At the Royal Society he was foreign secretary in 1907–1908 and secretary from 1908–1915, his full term of office not being completed owing to his appointment in 1915 as a consulting physician to the army with the B.E.F. During his secretaryship there were organised by the Society on behalf of the Government special commissions on Mediterranean fever and on sleeping sickness, with the activities of which he was closely concerned. His services were in constant demand as an examiner, a post for which he was so excellently fitted, and in this capacity he acted for the University of London, the English Conjoint Board, and the Indian Medical Service.

At the Royal College of Physicians of London he played a prominent part from the day of his election as a Fellow and his selection as Goulstonian lecturer. He was Croonian lecturer in 1904, Lumleian lecturer in 1920, and Harveian Orator in 1926, the year of his election to the presidency of the College. He served this office for five years and was an admirable president, exercising his gifts of accuracy, retentive memory, and fairness to the appreciation of everyone. The tercentenary celebrations in honour of Harvey occurred during his term of office and were carried through with great success. Reference has already been made to his Goulstonian lectures, and in his subsequent addresses he displayed the same general wisdom and special accomplishment, maintaining in these deliveries his great ideal that research should have for its object the advance of clinical medicine. In the Croonian lectures on Bright's Disease and its Varieties, there was a certain sequence to the Goulstonians, especially when the lecturer was discussing the excretory activities of the kidney. Bradford, the most fair and courteous of opponents, could be emphatic when emphasis was needed, and he always felt that it was needed when protesting against interference with the work of research by prejudiced observers. In these lectures he took occasion to emphasise the similarity that had been found to exist between experimental results and the processes seen in the human subject as a result of renal disease, thus justifying the prosecution of experimental inquiry. In the Lumleian lectures, delivered after the war, Bradford narrated his clinical experiences during the war, when with the rank of major-general and as consulting physician to the B.E.F. he was present throughout the campaign in France and Flanders. After useful reflections upon problems in connexion with wastage, due or partly due to battle casualties, he dwelt on the occurrence in the armies of nephritis and polyneuritis and on the result of gunshot wounds of the chest. In the Harveian Oration, delivered just before his election as president of the College, he expounded eloquently the debt which medicine owes to the experimental methods introduced by Harvey. Harvey's greatness he found to be shown by the fact that, notwithstanding the conditions prevalent in his time, he was able so to free himself from the traditions of the past, and from the influence of authority and dogma, as to lay the foundations of modern science by his insistence on the fundamental importance of experiment and of accuracy of observation. This series of lectures, ranging over more than a quarter of a century, demonstrated Bradford's persistent point of view, that only through intensive inquiry, relentless scrutiny of findings, and testing of theories can advances be brought about.

Bradford, until shortly before his death, was senior medical adviser to the Colonial Office. He was also extremely well posted in all the problems, social, charitable, and material, comprised in the organisation of the voluntary hospitals. And his long connexion with the King Edward Hospital Fund for London formed another call upon time which seemed ever inexhaustible. He was chairman up to a few days before his death of the executive committee of University College, and his interest in University College Hospital was maintained in the most intimate way until the end of his life.

But those who may have regarded Bradford either as an unbending man of science or a distinguished official would be surprised to know how complete his familiarity was with the conduct of medical practice and with the material and ethical difficulties arising in connexion with it. He was for many years president of the London and Counties Medical Protection Society. He presided regularly at the meetings of the Society and entered carefully into the claims of all contending parties, and although his ideals of professional behaviour were very high he was sympathetic with those whom ignorance or indiscretion had placed in a difficult position, and leaned to the side of mercy in his judgments.

Bradford was appointed K.C.M.G. in 1911, was made C.B. and C.B.E. at the termination of the war, and in 1931 was created a baronet. He was a corresponding member of American and French medical societies and received honorary degrees in science, medicine, and law in the universities of Cambridge, Edinburgh, Dublin, Durham, and Christiana. Never was recognition more fully merited.

Sir John Rose Bradford married, in 1899, Mary, daughter of the late Thomas Ffoulkes Roberts, J.P., and niece of the well-known physician and authority on renal disease, Sir William Roberts. There were no children of the marriage. Lady Bradford followed her husband abroad almost immediately after he was appointed consulting physician to the B.E.F., and then became an unofficial letter-writer for the sick and wounded. What beautiful work she did she has narrated in an unassuming little book "A Hospital Letter-writer in France," from which it can be gathered that in communicating with the relatives of the wounded soldiers she did much more than send greetings from the patients to their friends, but included an accurate medical report of the condition of the patients at the time of writing. The sympathy of all will go out to Lady Bradford in her great loss.

Sir Thomas Barlow writes: "By the death of Sir John Rose Bradford, London has lost one of its worthiest physicians and ablest teachers of the science of medicine. I first got to know him when he came 'across the way' from University College to the Hospital. He soon gained the esteem of his teachers by his quick apprehension of [illegible] rpretation of physical signs [illegible] ac [illegible] his reports. He was an admirable house physician, always enthusiastic and alike indefatigable in ward, casualty and post-mortem room in carrying out the instructions of his chief, Dr. Ringer.

"It was during this period that Bradford made some noteworthy investigations on acute severe pernicious anæmia. He will, of course, be specially remembered by his researches on the functions of the kidneys and notably in relation to the removal of varying amounts of kidney substance. He himself considered that his best research work was concerned with electrical changes in salivary gland and other gland secretions, and collateral to these must be placed his investigation on the vaso-motor nerves of kidneys, lungs and limbs. It should also be mentioned that, stimulated by his friend, Sir Michael Foster, he worked out some important points in the anatomy of the trypanosomes of sleeping sickness.

"Early in his career Bradford was awarded a scholarship by the Grocers' Company for original scientific research. His relations with the Company were always most cordial, and later in life he was appointed their adviser on grants to be made for science research. He was elected assistant physician to U.C.H. at the early age of 26, and in due course full physician, and was appointed successively professor of materia medica and therapeutics, professor of systematic medicine and lecturer on clinical medicine. Both as lecturer and as clinical teacher, Bradford was lucid and terse, and developed his expositions on a scientific basis. He had an accurate and well-trained clinical memory and was able to recall details of patients' symptoms in a way which astonished his auditors. He established a warm personal relationship with his students and especially with his house physicians and clinical clerks, with many of whom he retained an abiding friendship till the end of his life.

"To those who met him casually, or only officially, Bradford's manner, in his younger days, though courteous, appeared somewhat cold and reserved. He found it difficult to maintain even an outward semblance of friendliness to those who fell short of his own fine standard of mental and moral integrity, but with riper years he became, not less shrewd in judgment, but less trenchant in criticism. This occasional austerity of manner disguised a very tender heart, and anyone in pain or trouble could be sure of enlisting his unremitting sympathy and help, as was evidenced by the readiness with which his colleagues, former students and nurses appealed to him for counsel when they or their belongings fell ill.

"His friendships, both with men and women, were an important element in his life, and in the company of those whom he really knew, whether at home or in travel, or when entertaining his shooting friends at Bryn, he gave rein to his bantering but kindly humour, and was truly the good companion.

"He had many interests outside his profession, and was a keen traveller, though his activities in that direction were limited by his sense of duty to his wife's estate and the welfare of the tenants. He was a good ornithologist, had a sound working knowledge of marine zoology, and was an interested Fellow of the Zoological Society. His married life was exceedly happy, and Lady Bradford, herself an able botanist, was a perfect comrade, both in his working life and in times of leisure.

"Bradford's patience and fortitude during his last illness were beyond praise. His integrity, his devotion to duty and his courage recalled the virtues of the Roman Stoic, but his kindliness, his love of fair play and his generous appreciation of other people's good work were characteristic of the English Christian gentleman, and his genius of friendship will always keep his memory green among those who loved him and worked with him."

WALTER GAWEN KING, C.I.E., M.B., C.M. Aberd.

LATE SANITARY COMMISSIONER OF MADRAS AND BURMA

Colonel Walter King, I.M.S., who died in London on April 4th in his 84th year, occupied a position so important in Indian preventive medicine that he has been styled the father of public health in India, and his claim to the title was a substantial one.

Walter Gawen King, the son of the late Mr. J. H. King, of Kineton, near Warwick, received his medical education at the University of Aberdeen. He graduated there in 1873, and immediately entered the Indian Medical Service. He served first with the 5th Burmah Regiment, now the 90th Punjabis, and then as a civil surgeon filled a long series of important posts in Madras. He was professor of physics in the Presidency College, and of hygiene in the Madras Medical College, special sanitary officer to the city, superintendent of the government lunatic asylum, and inspector of vaccination. In 1894 he was appointed sanitary commissioner to the government of Madras, a post which he filled for 11 years. While in Madras he received the special thanks of the government for services rendered during the famines of 1876–77 and 1896–97, and in 1903 the government named after him its provincial laboratories, the King Institute of Preventive Medicine. In 1906 he became sanitary commissioner of Burma, and was for four years inspector-general of civil hospitals in Burma. During the war he acted as assistant director of medical services, A.M.S. to the Western command, and received the commendations of the Secretary of State for War for his valuable services.

King was undoubtedly one of the greatest of the members of the I.M.S. He was the first to insist on the necessity for separate departments of public health in the Indian provinces, and it is largely due to his powerful advocacy that the sanitary commissioners, now known as directors of public health, acquired positions of independence—previously they had been subordinate to the administrative officers of the provinces.

Colonel R. H. Elliott sends us the following outspoken comment on the position King won and maintained so well. "When," he writes, "in 1895 I first met King he was newly installed sanitary commissioner to the government of Madras, and the position was a difficult one because sanitation was by this appointment taken away from the control of the surgeon-general of the government of Madras and made a more independent appointment. King now fell directly under the government, and was independent of the surgeon-general. District medical officers in India had been formerly not only responsible for the supervision of the hospitals, but also for the sanitation of their districts. In the former capacity they were subordinate to the surgeon-general and in the latter to the district commissioner. The arrangement had worked well in old and sleepy days when sanitation was looked on somewhat as a fad. King's appointment upset all past ideas. He was obviously determined to do something, and a big something at that, for the people submitted to his care. The control of small-pox, of cholera, and of other diseases incidental to the movement of crowds during religious festivals was to King a live issue, the tackling of which in a practical manner was bound to bring great results in its train. There was an inevitable clash of personalities under the transference of responsibilities, and King went straight ahead and with the virtues of an enthusiast was regardless of consequences. Such was his vital force and so sound and true were his ideas that despite difficulties he won through. He knew what he wanted, and he was determined to get it." Colonel Elliott adds, "Not long ago he sent for me, being convinced he was getting glaucoma; characteristically he faced the worst and asked to be told the truth. King never was a clinical man, and his diagnosis was quite mistaken. When I saw him, old, broken in health, and bedridden, he was controlled by the courage of his early days. India owes Walter Gawen King a debt which it can never repay."

Colonel H. H. King, late superintendent of the King Institute of Preventive Medicine at Guindy, Madras, writes: "The institute perpetuates King's name and his devotion to public health. It was set up by the Madras government in 1903 in response to his wishes when sanitary commissioner of the presidency. It started as a vaccine lymph depôt, but gradually increased its activities and now covers a wider field than any other laboratory in India. It serves the whole presidency as a manufactory not only for vaccine lymph, but also for all bacterial vaccines except plague, both preventive and therapeutic. It is in addition the chief bacteriological laboratory in the presidency, and the only public health one, in which latter capacity it includes the work of public analysis under the Foods and Drugs Act. Finally, it is a research laboratory from both clinical and public health aspects, and I stress its many-sidedness because to have all these activities centred in one place gives Madras the advantages of concentration and economy in administration. The extent of the work has grown enormously, and though this expansion has occurred mainly since Colonel King's time, the government of Madras will ever remain indebted to him for his energy as founder. As I have recently been director of the institute, I may be permitted, as representing it, to offer the sincere condolences of myself and of the whole staff of the institute to Colonel King's family—their loss is ours, and indeed that of all India."

These tributes to the work and the personality of Colonel W. G. King illustrate the force for good of the man, and make us understand how those actually engaged in sanitary administration in India regarded him with such esteem.

JOSEPH SHARDLOW, M.B., M.R.C.S.

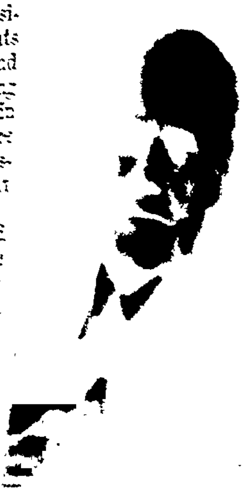
THE death of Dr. Shardlow, who was over 30 [illegible] on the honorary staff of the Sussex Mat[illegible] Hospital, occurred on April 1st after a long [illegible] The severance of his many connexions, professional and public, with Brighton life makes his death [illegible] as a public loss. He received his medical [illegible] at University College Hospital, took the [illegible] double diploma in 1896, and graduated as M.B. [illegible] in the following year. He was a successful [illegible] was house physician at his hospital and a dem[illegible] in physiology in the medical school, and was [illegible] time resident medical officer at the Eas[illegible] Hospital for Children. At the close of this [illegible] he entered medical practice in Brighton [illegible] the beginning made maternity work a [illegible] 1902 he was elected to the staff of the Sussex [illegible] Hospital, a position which he held [illegible] being for the last ten years the senior [illegible] staff. He was also one of the medical [illegible] Brighton and Hove Dispensary, where [illegible]

office was nearly as long as at the Sussex Maternity Hospital. He was medical officer for the Southern Railway, and in connexion with this post he received a presentation clock on behalf of the Southern Railway ambulance class. He was a frequent lecturer on behalf of the St. John Ambulance Brigade, and for many years acted as an examiner for the police. Dr. Shardlow was unmarried, and died in his 64th year.

SIR JOHN COLLIE, C.M.G., M.D. Aberd.

CONSULTING PHYSICIAN TO THE MINISTRY OF [illegible]

Sir John Collie, who died at his home in Por[illegible] terrace on April 4th at the age of 74, was [illegible] recognised as the most distinguished inves[illegible] cases of suspected malingering. But he [illegible] more than this; he put medico-legal pr[illegible] sound basis of experience.



Robert John Collie was the fourth son of [illegible] Collie, advocate, of Pitfodles, Co. Aberdeen [illegible] to school and college at Aberdeen, stud[illegible] there and at Edinburgh [illegible] qualified in 1882, taking the M.D. Aberd. [illegible] qualifying he spent some time in resident appointments at Edinburgh and Sunderland, staying on for six years in private practice among the industrial population at the latter place.

When he decided to try his fortune in London, he at once began to undertake work of a public character. In [illegible] he became associated with the London School Board as medical [illegible] [illegible]

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on malingering which first appeared in 1913 and was further elaborated in 1917, when an important chapter appeared on the "Return to Work," in which Collie emphasised not only the desire to shirk but the unwisdom of reinstating a man on wages he is not yet capable of earning. In many cases, he would say, the right answer to "Is A.B. a malingerer?" is "A.B. is really physically fit, but he requires that push towards usefulness which many men off work require. He has not any real incapacity, but he has a feeling of inability caused by nervousness, all of which could be overcome by work. He is brooding over his recent injury, and the compensation he is receiving takes away the stimulus to work. Half wages mean semi-starvation, and have a bad physical and moral effect."

Collie's share in framing the Workmen's Compensation Acts was one of his outstanding merits. He assisted the departmental committee in deciding the regulations for industrial diseases in the Act of 1906. He took the view that a medical assessor should be present in all cases where medical evidence was to be given about facts in dispute, and he obtained insertion in the Bill of 1923 of a clause giving either party the right to claim that a case should go before a medical referee.

Some idea of the extent of Collie's experience of occupational fitness may be gathered from a report, issued just before the war, on 31,000 consecutive medical examinations over a period of nine years, nearly half of which were made on candidates for employment. It was natural that he should be nominated by the Government on the advisory committee for the National Insurance Act of 1911, and although he only held the position for a year or so, it awakened an interest in the problems of insurance practice which he never lost. It would be tedious to enumerate the other bodies which used his services at this time in medical examination —assurance societies, shipping federations, or metropolitan police divisions; he was medical referee for the borough of Finsbury, a member of the Insurance Committee for London, and Home Office referee under the Workmen's Compensation Act. It could not be expected that medical mistakes were never made, but they were very exceptional, and Collie's skilled work for metropolitan authorities must in the aggregate have saved vast sums of money in wages, while rescuing multitudes of patients from the ill-effects of unnecessarily protracted invalidism. In 1908 he was put on the commission of peace, and in 1912 he was knighted. The war found him congenial occupation. He became a major, with temporary rank of colonel, in the R.A.M.C., and president of a special medical board for nervous disorders. He was one of the first to recognise that the emotional suppression cultivated by every good soldier predisposes to nervous strain, and he was as active in finding homes of recovery and suitable light occupation for shell-shocked men as in arranging immediate psychotherapeutic treatment behind the lines. For this service he was made C.M.G., and appointed director of medical services to the Ministry of Pensions.

Of Sir John Collie's personal qualities he has made it easier to write by saying of himself: "I have never been in the position of the man of whom everyone speaks well—few men have been so constantly abused for so long a time." This was, he thought, the inevitable result of conscientious performance of duties such as his. The feeling was no doubt accentuated by the fact that he was generally on the side of the angels and did not often represent what might be called the under-dog. A personal friend writes: "It would, perhaps, be not quite correct to describe Collie as a typical Aberdonian Scot, but he had a dogged honesty of mind and a contempt for humbug. He was courageous and fearless. A certain combativeness made him a 'bonnie fechter'; but this also made him somewhat heedless at times of the effects of his actions. His special subject made him a close student of human nature, especially that of the working man. This brought him much into contact with chicanery and fraud, but he had real sympathy for the genuine sick and a kindly eye for the man who honestly wanted to get back to work. He told me, however, that, for all his experience, he often found the mentality of the artisan difficult to fathom. Although he entered Parliament for a Glasgow division, I doubt whether politics really attracted him. He had a simplicity of outlook upon public affairs which contrasted strangely with his acknowledged shrewdness in his special métier."

All his life Collie had an urge to write. He had a lucid and unaffected style, and a vigorous and incisive way of making his point. Early in his life he collaborated with Dr. J. D. C. Mortimer in a book on "Nursing at Home," and with Dr. F. C. Wightman in little handbooks on "First Aid to the Injured and Hygiene and Health." Later he wrote (apart from malingering) on medical evidence and the law of compensation. A year or two ago, as chairman of the Paddington health committee, he brought out a report on infant mortality in the borough which contained evidence of skilled investigation. Quite recently he induced a team of writers to make up a volume on "Recent Progress in Medicine and Surgery."

Sir John Collie was twice married. In 1886 he married Jessie, daughter of John Edgar, of Locharwoods, Dumfriesshire, and after her death in 1928 he married Lady Arrol, daughter of Mr. James Robertson and widow of Sir William Arrol. He leaves a son, Arnold Edgar, who is qualified to practise both law and medicine.

MR. SHEPHERD DAWSON, D.Sc., who died on March 27th, was consulting psychologist to the Royal Hospital for Sick Children, Glasgow. Dr. Dawson held a prominent position amongst psychologists, having been chosen to occupy the position of president of the psychology section of the British Association at the Aberdeen meeting in 1934. His address on that occasion was reviewed in our columns at the time. Although not himself a member of the medical profession he was familiar with the study of psychological problems associated with disease in childhood, and for many years he investigated the effect of pathological processes on the intellect. The results of this investigation were embodied in a series of papers which appeared in the Archives of Disease in Childhood, and in a special report to the Medical Research Council. Last year he was invited to address the Royal Medico-Chirurgical Society of Glasgow on Disease and Intellect. He was something of an authority on the use of the statistical method, and his book "An Introduction to the Computation of Statistics" has proved of great help to workers in this field. A man of charming personality, ever ready to be of assistance, his early death is a serious loss to his colleagues, whose sympathy goes out to his widow and daughter.

MEDICAL NEWS

University of Aberdeen

On April 3rd the honorary degree of LL.D was conferred on Lieut.-Colonel A. T. Gage, I.M.S. (retd.), formerly director of the Botanical Survey of India and superintendent of the Royal Botanic Gardens, Calcutta (*in absentia*), and on Prof. J. C. G. Ledingham, F.R.C.P., F.R.S., director of the Lister Institute, London. Other degrees and diplomas were afterwards conferred as follows :—

M.D.—*Hugh Livingston and John MacLeod.
* Commended.

M.B., Ch.B.—G. M. Stephen (first-class honours); W. G. Mackinnon and E. G. G. Rhind (second-class honours); L. F. C. Berlinguet, William Burns, N. J. Craig, W. R. Darnley, Robert Fraser, W. R. Gauld, J. P. B. Gill, Evelyn W. Glennie, S. T. G. Gray, R. W. B. Greig, J. S. Johnstone, A. M. Keith, J. McI. D. McIntosh, Elizabeth Martin, P. L. Masor, William Michie, R. B. Rait, A. I. Ross, J. S. Simmers, R. S. Slessor, Marie S. Sutherland, and Alexander Watt.

D.P.H.—W. F. Gapper and Sheila Thomson.

University of Birmingham

Dr. J. S. M. Connell has been appointed lecturer in applied anatomy, Dr. R. E. Jones lecturer in bacteriology and assistant bacteriologist in the public health laboratory, and Dr. Fritz Jacoby research assistant in tissue culture and assistant lecturer in histology.

Research into Short-wave Therapy

The Medical Research Council have agreed to act as trustees in administering a benefaction of £4000 provided by the Stock Exchange Dramatic and Operatic Society and named in honour of the secretary of the society, Mr. Hugh S. Quekett. The purpose of the gift is the promotion of research into the value of short-wave radiation in the treatment of disease. The money will be used by the Council to meet the cost of assistance and special apparatus in experimental and clinical investigations to be made at the London Hospital under the direction of Prof. D. T. Harris, Dr. E. May, and Sir Robert Stanton Woods.

Welsh Board of Health

Dr. Nancy Gwendoline Howell has been appointed woman medical officer of the Welsh Board of Health. A former student of University College Hospital, she has for three years been assistant medical officer of health for Acton. As the only woman medical officer of the Board she will be especially concerned with maternity and child welfare service.

Liddle Prize at the London Hospital

This prize, which is offered by the college board of the London Hospital under the will of the late Dr. John Liddle every three years, will be awarded in 1936 for the best essay on the relation of pregnancy to diseases of the kidney, excluding infections of the renal tract. Particulars will be found in our advertisement columns.

British Medical Association

Katherine Bishop Harman Prize, 1932.—The Council of the Association will consider an award of this prize, of the value of £75, in the year 1936. The prize is for the encouragement of study and research directed to the diminution and avoidance of the risks to health and life that are liable to arise in pregnancy and child-bearing. Within this sphere competitors are free to select the work they wish to present. All medical practitioners registered in the British Empire are eligible to compete. Should no essay be, in the opinion of the Council, of sufficient merit, no award will be made, but the prize will again be offered in the year following; in this event the money value will be increased. Each essay must be typewritten or printed in English. It must be distinguished by a motto, and accompanied by a sealed envelope marked with the same motto, and enclosing the candidate's name and address. Essays must reach the medical secretary (to whom inquiries may be addressed), British Medical Association House, Tavistock-square, W.C. 1, not later than Dec. 31st, 1935.

Fellowship at University College Hospital

A Bilton Pollard fellowship of £650 per annum is offered to former residents at University College Hospital, London, who hold the diploma of M.R.C.P. Lond., or F.R.C.S. Eng. Particulars will be found in our advertisement columns.

Auxiliary Royal Army Medical Corps Funds

The annual meeting of the members of this society will be held at 5.15 P.M. on Friday, April 26th, at 11, Chandos-street, Cavendish-square, London, W., when the financial statement for last year will be presented and the officers and committee for this year elected.

Studentship at Guy's Hospital

The Astley Cooper studentship, which is tenable at the medical school of Guy's Hospital, becomes vacant in October of this year, and is tenable for three years. Particulars can be had from the secretary to the Astley Cooper trustees at the medical school office, and applications should reach him before May 1st.

East Ham Hospital

There is a debt of £18,000 on this hospital, which was opened six years ago, and until this is cleared off extensions cannot be undertaken. Lord Bethell has offered to give half the sum if the remaining £9000 is raised by the people of the district.

Marie Tempest Ward

A ward for members of the theatrical profession is shortly to be opened at St. George's Hospital. Miss Marie Tempest has asked that the proceeds of her jubilee matinee at Drury-lane theatre on May 28th shall be devoted to this purpose, and the ward is to be named after her.

Poplar Hospital Extension

Lord Reading recently opened the new Bernhard Baron out-patient department of this hospital. The extension has cost £25,000, half of which has been provided by the Bernhard Baron trust.

High Wycombe War Memorial Hospital

This hospital is too small for present needs and will have to be enlarged. It is proposed to double the accommodation by adding a second story and building wards over the existing ones. Of the 800 in-patients treated last year, 475 were members of the contributory scheme.

Stroud General Hospital

The income of this hospital for 1934 was £9389, which is the highest it has ever received. Over £5000 of this was raised by the penny-in-the-pound fund.

Hospital Contributions in Leicester

The Leicester and County Saturday Hospital Society received over £50,000 last year, an increase of over £1200 on the contributions for 1933.

West Suffolk General Hospital

A Jubilee appeal is being made by this hospital for £25,000 to provide a new children's ward and new paying patients' wards.

Royal Victoria Hospital, Dover

This hospital has closed the year with a balance of £33. Two new wards accommodating 20 beds each have been added, and the average cost for each patient has been reduced.

Northamptonshire Mental Institution

Sir Hilton Young, Minister of Health, has opened an extension of the Northamptonshire County Mental Institution at Berry Wood.

Bromley Hospital

This hospital is to have two new wards with balconies, one for men and one for women, which it is estimated will cost £9000. The nurses' home and the massage department will also have to be extended, and a resident medical officer will have to be appointed.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. W. A. Jolliffe to *Cairo*, and as squadron M.O.; L. F. Strugnell to *Barham*; M. B. Macleod to *President* for service inside Admiralty, and as Asst. to M.D.G.; F. C. Wright to *President* for course; and E. Heffernan to *Drake* for R.N. Hospital, Plymouth.

Surg. Comdrs. (D.) J. F. Place to *Pembroke* for R.N.B.; and W. C. Murray to *Victory* for R.N.B.

Surg. Lt.-Comdr. (D.) C. J. Finnigan to *Victory* for R.N.B.

Surg. Lt.-Comdr. J. J. Benson to *Shoreham*.

Surg. Lt.-Comdr. A. M. Pomfret is promoted to rank of Surg. Comdr.

Surg. Lt. A. K. Stevenson to *Exmouth*.

The following have been appointed by the Admiralty as Surgeon Lieutenants for short service: B. R. Alderson, M. Cay, S. C. S. Cooke, D. C. Dobson, J. M. Holford, D. W. Pratt, W. F. Richards, and R. H. A. Turner, and appointed to *Victory* for R.N. Hospital, Haslar, for course of instruction.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. C. Seeley to *Barham*.

Proby. Surg. Sub-Lt. R. T. Gaunt to *Valiant*.

MEDICAL BRANCH GRATUITIES

The Admiralty have made arrangements with the Lord Kitchener National Memorial Fund for the grant of scholarships in aid of the cost of the medical education of the sons of officers and men and ex-officers and men of H.M. Forces, on the condition that holders of these scholarships undertake to enter the Royal Navy as medical officers when qualified to practice medicine and surgery. As the cost of these scholarships is borne by naval funds, the Admiralty consider that they should be authorised to deduct at their discretion the value of the scholarship, in whole or in part, from any gratuity which may be payable to a medical officer who has entered the R.N. in accordance with his undertaking as the holder of one of these scholarships and who fails to complete 15 years' service in the Navy. Authority for this is given in a new Order in Council. No deduction is to be made from the gratuity of a medical officer who is invalided from the naval service for a cause certified by the competent medical authority to be directly attributable to the conditions of his service.

ROYAL ARMY MEDICAL CORPS

Lt. A. J. Clyne to be Capt.

TERRITORIAL ARMY

J. W. E. Webster (late Offr. Cadet, Aberdeen Univ. Contgt. (Med. Unit), Sen. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE

Squadron Leader A. A. Townsend to No. 1 Air Defence Group Headquarters for duty as Medical Officer.

Flight Lt. W. P. Stamm to No. 8 (B) Squadron, Aden.

The undermentioned Flight Lts. are granted permanent commissions in that rank: F. H. Peterson and J. L. Walsh.

Flight Lt. A. H. Barzilay is transferred to the Reserve, Class D.

INDIAN MEDICAL SERVICE

Lt.-Col. D. D. Kamat retires.

Indian Medical Department.—Maj. (Sen. Asst. Surg.) D. A. Gibbon retires.

The Commander-in-Chief has made the following appointments with March dates: Col. R. E. U. Newman, O.B.E., M.C., as Asst. Director of Medical Services for Waziristan District, in place of Col. G. A. D. Harvey, C.M.G., who vacated on March 24th; Maj. N. Cantlie, M.C., R.A.M.C., as Specialist in Surgery, Rawalpindi District; Capt. A. F. Kennedy, R.A.M.C., as Specialist in Surgery, Deccan District; and Capt. A. T. H. Marsden, R.A.M.C., as D.A.D.P., Burma District.

COLONIAL MEDICAL SERVICE

Dr. F. Bell has been appointed Medical Officer, Tanganyika; Dr. L. F. Day becomes Medical Officer, Malayan Medical Service; Dr. F. J. C. Haslam, Director of Medical Services, Northern Rhodesia; Dr. G. H. Henry, Medical Officer, Hong-Kong; and Dr. R. R. Scott, Director of Medical Services, Tanganyika.

DEATHS IN THE SERVICES

The death occured on April 7th at Edinburgh, after a short illness, of Col. George St. Clair Thom, C.B., C.M.G., C.B.E. Born in Madras in February, 1870, the son of George Thom, LL.D., he was educated at Dollar Academy and Edinburgh University, where he graduated M.B. in 1893. He entered the Royal Army Medical Corps in 1894, became Capt. in 1897, Major in 1906, Lt.-Col. in 1915, and Colonel, Army Medical Services, in 1917. He served in the South African War, 1900–1902, was mentioned in despatches and was awarded the Queen's medal with three clasps and the King's medal with two clasps. He was D.A.D.M.S., Lowland Divn. (T.F.) in December, 1913, and later accompanied the Division to Gallipoli in the European war, and was in 1916–17 Deputy Assistant Director General at the War Office. Then he served on the Staff and as Deputy Director of Medical Services, Russian Expeditionary Force, being mentioned in despatches. He was created C.M.G. in 1916, C.B. (Mil.) 1918, and C.B.E. (Mil.) 1919. In 1924 he was appointed superintendent of the Edinburgh Royal Infirmary, and in February of this year had reached the retiring age of 65, but was asked to remain for another year. A note of appreciation of his work there appears in the letter from our Scottish correspondent this week.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 15th.

Odontology. 8 P.M. Mr. Harold Round and Dr. H. J. R. Kirkpatrick: Sequelæ following Injection Anæsthesia in the Mouth. Prof. W. H. Gilmour: Principles concerned in Tooth-cavity Preparation.

TUESDAY.

General Meeting of Fellows. 5.30 P.M. Ballot for election to the Fellowship.

CHELSEA CLINICAL SOCIETY.

TUESDAY, April 16th.—8.30 P.M. (Hotel Rembrandt Thurloe-place, S.W.), Mr. A. S. Blundell Bankart and Mr. Frank Romer: Manipulative Methods.

NORTH-WEST LONDON MEDICAL SOCIETY.

TUESDAY, April 16th.—9 P.M. (Regal Rooms, Regal Cinema. Finchley-road, N.W.), Dr. J. B. Mennell: Manipulation in General Practice.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE *MEDICAL ASSOCIATION*, 1, *Wimpole-street*, W.

SATURDAY, April 13th.—3 P.M. (Princess Beatrice Hospital, Richmond-road, S.W.), Mr. A. J. Wilson Chamings: Demonstration on diseases of the ear, nose, and throat. (Open only to members and associates of the Fellowship.)

PUBLIC DISPENSARY AND HOSPITAL, Leeds.

WEDNESDAY, April 17th.—4 P.M., Mr. L. N. Pyrah: Tuberculosis of the Genito-urinary Tract.

GENERAL INFIRMARY, Leeds.

TUESDAY, April 16th.—3.30 P.M., Mr. Pyrah: Demonstration of Surgical Cases.

UNIVERSITY OF BIRMINGHAM.

TUESDAY, April 16th.—3.30 P.M. (General Hospital), Dr. A. P. Thomson: Blood Pressure.

ROYAL INFIRMARY, Manchester.

TUESDAY, April 16th.—4.15 P.M., Mr H. T. Simmons: Anal Conditions.

ROYAL INFIRMARY, Dundee.

THURSDAY, April 18th.—3.15 P.M., Prof. Patrick: Cardiac Failure: Clinical Aspects. Prof. Cappell: Cardiac Failure: Pathological Aspects.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION,

WEDNESDAY, April 17th.—4.15 P.M. (Western Infirmary), *Dr. J. G. Macgregor-Robertson.*

Appointments

ATTKINS, L. C., L.D.S. R.C.S. Eng., has been appointed Dental Surgeon to the St. John Clinic, London.

BARWELL, HAROLD, M.B. Lond., F.R.C.S. Eng., Laryngologist to the St. John Clinic, London,

DOUGHERTY, F. N. B., M.B. Cape Town, Resident Medical Officer to the Royal Victoria Infirmary, Newcastle-upon-Tyne.

LESLIE, W., M.B. Lond., F.R.C.S. Eng., Senior Assistant Medical Officer (Grade I.) to St. Luke's Hospital, Chelsea, L.C.C.

MILES, EDWARD, M.B. Liverp., D.P.H., Medical Superintendent and Master of the Romford Institution.

WARD, E. M., M.B. Lond., Municipal Pathologist at Leicester.

London County Council School Medical Service.—The following appointments are announced :—

MCKEOWN, K. McC., M.D. Lond., D.P.H., Assistant Medical Officer ;

SCOTT, W. A., M.D. Belf., D.P.H., Assistant Medical Officer ;

WOODHEAD, B. E., M.B. Birm., M.R.C.P. Lond., D.P.H., Assistant Medical Officer ; and

POOLE, F. D. S., M.B. Lond., Medical Officer and Dental Anæsthetist at King's Canadian Residential Open-air School, Hampton-hill.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Hospital for Sick Children.—Hon. Asst. Surgeon to Ear, Nose, and Throat Dept.

Aberdeen Royal Infirmary,—Hon. Asst. Phys. Also Hon. Jun. Asst. Surg. to Ear, Nose, and Throat Dept.

Banbury, Horton General Hospital.—Res. M.O. At rate of £150.

Bangor, Cærnarvonshire and Anglesey Infirmary.—H.P. £125.

Bath Royal United Hospital.—Out-Patient and Cas. O. At rate of £150.

Erdington House.—Jun. Asst. M.O.'s. Each at £200.

ospital, Wandsworth Common, S.W.—H.P. At rate

yal Infirmary.—Two H.S.'s. Each at rate of £135.

yal Alexandra Hospital for Sick Children.—H.S.

British Legion Village, Preston Hall, near Maidstone.—Asst. to Med. Director. £500.

Burnley Municipal General Hospital.—Jun. Res. M.O. £150.

Canterbury, Kent and Canterbury Hospital.—Two Hon. Anæsthetists.

Cardiff Royal Infirmary.—Res. M.O. and Res. Surg. O. Each at rate of £200.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall.—H.P. At rate of £150.

Chester Royal Infirmary.—H.S. £150. Also Hon. Asst. Phys.

Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria-park, E.—Registrar. Also Asst. Radiologist.

Denbigh, North Wales Sanatorium.—H.P. At rate of £100.

Dewsbury and District General Infirmary.—H.S. £150.

Doncaster Royal Infirmary.—Cas. H.S. £175.

Dorchester, Dorset Mental Hospital, Herrison.—Sen. Asst. M.O. £450.

Eastbourne, Royal Eye Hospital, Pevensey road.—H.S. £100.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. £150.

Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.

Glamorgan County Council.—Asst. M.O. £400.

Guy's Hospital, S.E.—Astley Cooper Studentship.

Halifax Royal Infirmary.—Res. Surg. O. At rate of £250.

Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.

Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.

Herefordshire General Hospital.—H.S. and Cas. O. At rate of £100.

Hong Kong University.—Professor of Obstetrics and Gynæcology. £1000–50–£1100.

Huddersfield Royal Infirmary.—Res. Surg. O. £225–£250.

Ilford Borough.—Asst. M.O.H. £600.

Inverness, Royal Northern Infirmary.—H.S. At rate of £100.

Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.

Leeds Education Committee.—Asst. School M.O. £500.

Leeds, St. James's Hospital.—Visiting Anæsthetist. £100.

Leicester City.—M.O.H. £1400.

Liphook, Hants, King George's Sanatorium.—Asst. M.O. At rate of £200.

London County Council.—Asst. M.O.'s. Each £470.

London Hospital Medical College, E.—Liddell Triennial Prize. £120.

London Homœopathic Hospital, Great Ormond-street, W.C.—Two Res. M.O.'s. Each £100.

London Jewish Hospital, Stepney Green, E.—Res. M.O. and H.P. At rate of £150. Also H.S. and Cas. O. Each at rate of £100.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150. Also Med. Reg. £50.

Manchester Ear Hospital, Grosvenor-square.—H.S. At rate of £150.

Manchester, Monsall Hospital for Infectious Diseases.—Asst. M.O. £350.

Manchester, Royal Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.

National Hospital, Queen-square, W.C.—Hon. Surg. Asst., Asst. Surg., Asst. Phys., and Anæsthetist.

Newark General Hospital.—Res. H.S. £175.

Newcastle General Hospital.—H.S. At rate of £150.

Norwood and District Cottage Hospital.—Hon. Anæsthetist.

Nottingham and Midland Eye Infirmary. Res. H.S. £200.

Preston, Sharoe Green Hospital.—Sen. Asst. Res. M.O. At rate of £150.

Princess Beatrice Hospital, Earl's Court, S.W.—Hon. Clinical Assts. Also two Hon. Anæsthetists.

Queen's Hospital for Children, Hackney-road, E.—Asst. Phys.

Reading, Royal Berkshire Hospital,—H.P. and H.S., H.S. to Special Depts., Cas. O. Each at rate of £125.

Rochester, St. Bartholomew's Hospital.—H.P. At rate of £175.,

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.

St. Alban's, Hill End Hospital, &c.—H.P. At rate of £165.

St. Bartholomew's Hospital, E.C.—Chief Asst. to X Ray Diagnostic Dept.

St. Leonard's Hospital, Hoxton-street, E.—Res. Med. Supt. £1000.

St. Marylebone, Borough of.—Two Asst. M.O.H.'s. £800.

St. Mary's Hospital, W.—Jun. Clin. Asst. for X Ray Dept. £50.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.s. At rate of £175 and £120 respectively.

St. Neots, Three Counties Hospital.—Med. Supt. £1000.

Sheffield Royal Infirmary.—Asst. Aural and Ophth. H.S. At rate of £80. Also Jun. Asst. Pathologist. £300.

Singapore, King Edward VII. College of Medicine.—$850 per mensem.

Southend-on-Sea General Hospital.—H.P. and Cas. O. Each at rate of £100.

Stockport Infirmary.—H.P. £150.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. for Aural and Ophth. Depts. Also Cas. H.S. Each at rate of £150.

Stoke-on-Trent, Stanfield Sanatorium.—Asst. Tuber. and Asst. M.O. £350.

Sunderland Royal Infirmary.—H.S. £120.

Swanley Hospital Convalescent Home, Parkwood.—Res. M.O. At rate of £200.

Truro, Royal Cornwall Infirmary,—H.S. £170.

University College Hospital, Gower-street, W.C.—Bilton Pollard Fellowship. £650.

West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.

West London Hospital, Hammersmith-road, W.—Res. Anæthetist. Also H.S. to Throat, Nose, and Ear Dept. Each at rate of £100. Hon. Asst. Anæsthetists.

Willesden Corporation.—Asst. M.O. £600.

Willesden General Hospital, Harlesden-road, N.W.—Cas. O. At rate of £100.

Woolwich and District War Memorial Hospital, Shooter's Hill, S.E.—Hon. Laryngologist. Also Surg. Reg. £100.

Worksop, Victoria Hospital.—H.S. At rate of £160.

Births, Marriages, and Deaths

BIRTHS

ATKINSON.—On April 2nd, at Welbeck-street, the wife of E. Miles Atkinson, F.R.C.S. Eng., of Bath, of a daughter.

BANKS.—On March 31st, at Gurney-drive, Hampstead Garden Suburb, N., to the wife of A. Leslie Banks, M.D. Lond.—a son.

HOUSTON.—On April 2nd, the wife of N. Roy Houston, M.D. Q.U. Ont., F.R.C.S. Edin., of Tonbridge, Kent, of a son.

MCFARLANE.—On April 3rd, at Cheam, the wife of Arthur Sproul McFarlane, M.B. Glasg., of a son.

STRÖM-OLSEN.—On April 4th, at a London nursing-home, the wife of Rolf Ström-Olsen, M.D., B.Sc., D.P.M., of a daughter.

THOMAS.—On April 4th, at Aldermaston, Berks, the wife of G. Wynne Thomas, M.B. Camb., of a daughter.

UNGLEY.—On April 3rd, at Whickham, Newcastle-upon-Tyne, the wife of C. C. Ungley, M.D., of a daughter.

WILLIAMSON.—On April 4th, the wife of James C. F. Lloyd Williamson, F.R.C.S. Eng., of Hove, of a son.

MARRIAGES

GIMBLETT—MCNICOL.—On April 4th, at St. Columba's, Pont-street, London, Charles Leonard Gimblett, M.D. Camb., F.R.C.S. Eng., Devonshire-place, W., to Audreen McNicol, daughter of Mr. and Mrs. Duncan McNicol, Holland Park, W.

DEATHS

BAYLOR.—On March 30th, at The Orchard, Ash, Canterbury, Henry Talbot Baylor, L.R.C.S.I., Major, R.A.M.C. retd., aged 76.

BODINGTON.—On April 4th, suddenly, at Halesowen, Percival James, M.B. Edin., late Surgeon-Captain, R.H.G.

BRADFORD.—On April 7th, at Manchester-square, W., Sir John Rose Bradford, Bart., K.C.M.G., F.R.S., aged 71.

COLLIE.—On April 4th, at Porchester-terrace, W., Sir John Collie, C.M.G., M.D. Aberd., aged 74.

KING.—On April 4th, at Sevington-road, Hendon, N.W., Colonel Walter Gawen King, C.I.E., I.M.S., retd., in his 84th year.

NICHOLS.—On April 4th, suddenly, at Dawlish, Lieut.-Colonel Frederick Peter Nichols, M.B. Camb., M.R.C.S. Eng., R.A.M.C. retd., eldest son of the late William Peter Nichols, F.R.C.S., of Norwich, aged 78.

PECK.—On April 4th, Herbert Peck, M.D. Edin., D.P.H., Barrister-at-Law, of Hasland, Chesterfield, in his 74th year.

SHARDLOW.—On March 31st, at Hove, Sussex, Joseph Shardlow, M.B. Lond., M.R.C.S. Eng., Captain R.A.M.C. (T.), aged 63 years.

YELD.—On April 3rd, at Edgewood, B.C., Reginald Arthur Yeld, M.D. Camb.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

PREVENTION OF THE COMMON COLD *

BY ERNEST WARD, M.D. Camb., F.R.C.S. Eng.
HON. SECRETARY, JOINT TUBERCULOSIS COUNCIL

FIRST, what is the "Common Cold"? It is an endemic virus disease accompanied by coryza, pharyngitis, tracheitis, and some bronchitis, and complicated after the first infection by the growth of various other parasitic organisms, such as pneumococcus, streptococcus, staphylococcus, *Micrococcus catarrhalis*, and Pfeiffer's bacillus. In addition to the endemic there are epidemic waves, of which three main ones can be traced each year; the first in October and November—the autumn cold; the second in January and February—the winter cold; and the third in April or May—the spring cold. Of these the most severe is the winter cold, often accompanied by pyrexia and a wealth of other symptoms which have induced observers to name it influenza. There is no proof that influenza is a distinct disease, and it is just as likely that the cold virus causes a polymorphic reaction in different individuals similar to the streptococcus, which has been incriminated as the causative organism of cellulitis, scarlet fever, acute rheumatism, chorea, erysipelas, malignant endocarditis, puerperal fever, and impetigo. In any epidemics a similar train of symptoms is likely to prevail among the victims, and these may be toxic, catarrhal, gastric, enteric, colitic, cardiac, pulmonary, nephritic, and cerebral. There are other causes of coryza, pharyngitis, and tracheitis in addition to the common cold, for these symptoms are common at the onset of known specific fevers, and probably also of attacks from other parasitic organisms not yet identified.

Next, what is the origin of the immunity to colds which both prevents their incidence and terminates their attacks? The immunity is both congenital and acquired. Acquired immunity varies according to the individual attacked and the nature of the attack, but is usually short-lived, 1 to 6 months, and immunity acquired to a coryzal attack may not withstand an attack in which the prevailing symptoms are gastric, enteric, or in any other way atypical. Far and away the most important immunity is congenital, and it is on account of this that some individuals never "catch cold," and others but rarely, say every few years. A similar congenital immunity is found to all disease, and very definitely to tuberculosis, or the population would long ago have died out or been gradually replaced by an immune population.

How can colds be prevented? No doubt such precautions as avoiding chill or worry, wet feet, exposure to infection, or becoming over-tired, as advocated each autumn in all popular newspapers, have a certain limited value, but these precautions cannot always be followed by those leading a life of normal activity; so we have to consider other more strictly medical measures. Of the mechanism of congenital immunity we know nothing, and so are entirely unable to confer it artificially; research in this direction, if successful, would be of inestimable value to the community.

In the search for an artificially acquired immunity we are handicapped first, by the short duration of the natural immunity—an exemption even if successfully produced, but enduring only 1 to 6 months, would be of doubtful utility; secondly, by our lack of knowledge of the causative organism and the failure to cultivate it on artificial media. So that any vaccine therapy becomes haphazard and non-specific, depending rather on arousing latent powers, such as may occur in cases of sarcoma treated with Coley's fluid, or arthritis with T.A.B. vaccine, and protection from concomitant infections, than the creation of protection against the chief morbid agent. Observing, as do most practitioners, a large number of attempts to protect against colds by various methods of vaccination leaves an impression of disappointment and disbelief. Single cases and special methods may be noted and vaunted, but the result, when the numbers are sufficiently large to merit serious consideration, is invariably disappointing.

A host of other prophylactic measures have been advocated—physical methods, such as cold baths in the morning, bathing chest and neck with cold salt water night and morning, dietetic methods, such as the ingestion of fats (bacon and cod-liver oil) and vitamins A, B, or D, and treatment by various drugs, such as cinnamon, quinine, belladonna, camphor, citrates, and strychnine, but none of these can really be relied upon, and the same applies to local applications by brush, gargling, or nasal douche. In years when colds are scarce the advocates of all these methods will be quoting successes, but nothing will be heard from them in the seasons when colds are frequent and severe.

My own conclusion is that nothing will protect a susceptible subject from the three principal colds of the year, but it may be possible to assist him to avoid intermediate infections if the patient at risk is reasonably careful to avoid exposure to sources of infection, or excessive chilling of the skin surface, and takes cod-liver oil emulsion or some other form of cod-liver oil during the autumn and winter months.

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* A memorandum prepared at the request of the Joint Tuberculosis Council.

A HISTORY OF GERMAN MEDICINE

A CONCISE account of the development of medicine in Germany from the earliest times up to the present day is given by Prof. Haberling [1] in a little book excellently translated into English by Jules Freund. The story is well balanced, impartial, and evidently embodies a vast amount of research.

When the black death (bubonic plague) ravaged Germany in 1348 no medical help was available because the ancient writers on whom reliance was then placed mentioned no remedies, and to make matters worse foreign universities refused to admit German students for fear that they should bring the infection. Accordingly, the first German university was founded at Prague in 1248 and several more during the next century—e.g., Erfurt 1382, Heidelberg 1386, Cologne 1388, and Leipzig 1409. The course in medicine, it seems, was expensive and frequently took six years, so that students were comparatively few; and at each centre there were seldom more than two professors, one of whom taught the theory, the other the practice of medicine. Dissection of the cadaver did not become general until about a hundred years after it was introduced at Bologna in 1315. German students, however, had to make obligatory visits to the pharmacies. Owing to the uncrowded state of the profession, physicians in Germany in the fourteenth century enjoyed a high status and were exempt from taxes. In certain statutes at Nuremburg in 1350 and in Silesia it was forbidden on the one hand that physicians should prepare medicines themselves, and on the other that pharmacists should treat patients. Municipalities that could afford it often appointed physicians of their own and some of these "town physicians" became famous.

It is curious that the Germans, who have since proved such adepts at the experimental method in all its branches, should have taken so long to get going; for centuries their physicians, like those of other nations, were content to rely upon the imagination rather than set to work and find out what was actually happening in the human body in health and disease. The first of two important factors in the awakening was the invention of printing in Germany by Guthenberg. The first medical book was by an unknown author and was printed at Augsburg in 1472. In the same year at Ulm a treatise on plague by the town physician Steinhövel was printed: it ran into several editions and continued with modifications until the eighteenth century. In 1484 the first book on botany, "The Garden of Health," by Peter Shoeffer, was printed at Mainz, the birthplace of printing. According to Prof. Haberling, some of these early German herbals by physicians who are called the "fathers of botany" are extremely attractive, their illustrations being beautifully executed. The second event that led to the great awakening was the fall of Constantinople in 1483, which caused the emigration of countless Greek scholars to other parts of Europe; they brought with them precious manuscripts of the ancient physicians and taught Greek to others. In editing these ancient transcripts German physicians were prominent, and one of them, Johannes Hagenbutt (1500–58), after 15 years of labour, brought out a new edition of all the works of Hippocrates that had survived.

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[1] A History of German Medicine. By W. Haberling, Professor of the History of Medicine, Düsseldorf. Translated by Jules Freund. Clio medica series. New York: Paul Hoeber. 1934. Pp. 160. $1.50.

The first great German physician to probe deeply into the secrets of nature was Theophrast von Hobernheim, who belonged to an old aristocratic Swabian family, was born in 1493, and is known to-day as Paracelsus. His father, a learned physician, taught him how to extract drugs from the leaves, petals, roots, and stems of various plants, and also taught him how to look for metals in urine and to produce new chemical compounds by melting them and combining them with other metals. Paracelsus devoted his life to searching for new chemical compounds that would help the human body back to health after severe illness. He travelled widely and studied the characteristics of all kinds of metals and used this knowledge in the most varied diseases. His success was great, and, as Prof. Haberling points out, he created new drugs and was thus the father of the chemotherapy of to-day. In addition to his researches Paracelsus performed a great service by fighting with all his might against the healing methods of his contemporaries, who relied entirely on the books of the ancients; and he also saw the futility of the doctrine then prevalent of the "Four Humours." He set himself to build a new science founded on experience and experiment. His works were chiefly issued in German, and for that reason had a wider circulation than would have been the case had they been written in Latin, as was then usual. He met with much jealousy and persecution, and the printing of some of his best books was prohibited by the medical faculties of Leipzig and Vienna; but they were published by his followers after his death. He died at Salzburg in 1541 in his forty-eighth year. A fine and complete edition of his works in 14 volumes has recently been brought out by Paul Sudhoff, the well-known medical historian.

The early history of German surgery is also described by Prof. Haberling. In 1497 a beautiful book "Die Chirurgia," by Hieronymus Brunschwig of Strassburg, appeared; it was the first work to give an adequate description of gunshot wounds. In 1583 a good presentation of contemporary ophthalmology was published by Bartisch, who was the first to extirpate the eyeball, and also operated for cataract. He opposed eyeglasses, which had already become fashionable though they were extremely expensive, costing from 60 to 150 marks. It is interesting to note that in 1567 Johann Weier, who was physician to the Duke of Cleves, wrote a book in which he pointed out that so-called witches were not possessed by any devil or demon but simply hysterical or melancholic old women who ought to be treated for their malady and not killed as witches. The book had several editions, but failed to carry conviction.

In the seventeenth century Harvey's great book on the circulation was published at Frankfort in 1628 and was received with enthusiasm in Germany. By 1632 Rolfinck, professor of anatomy and chemistry in Jena, had publicly accepted Harvey's views, and in 1640 Conring, a professor at Helmstadt, published experiments on living animals confirming Harvey's thesis and refuting his opponents in Paris and elsewhere. Valuable support of Harvey was also given by Slegel of Jena, whose work defending him against Riolan and giving a clear description of the fœtal circulation was published in 1650.

Among German physicians of the seventeenth century are several famous names, including Schneider of the Schneiderian membrane, Peyer of the "patches" in the small intestine, Brunner of gland fame, Wirsung, who in 1642 called attention to the pancreatic duct, and Vesling, who in 1647 was the first accurately to describe the suprarenals. In 1638 Hauptman and Lange put forward a curious theory in which they ascribed the origin of disease to parasites, worms, mites, and other small living beings that developed in decaying vegetable matter. Their "Pathologica animata" contains a description of wondrous little beings discovered by them with the microscope in various tissues and fluids of the human body.

In the eighteenth century Stahl and von Haller were pre-eminent. The former produced a curious system of medicine that Prof. Haberling describes, but in his opinion Albrecht von Haller of Gottingen (1708–71) was the greatest German figure in medicine after Paracelsus both as physician and investigator until the nineteenth century. Finally, the great German investigators and physicians during the past hundred years are all described in turn in this excellent little book, which also gives an account of the scientific study of the history of medicine that is now being carried on in Germany.

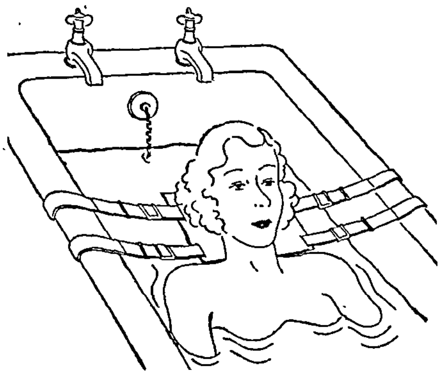
TREATMENT OF ACUTE OSTEOMYELITIS

AT a recent meeting of the New England Surgical Society (New Eng. Jour. Med., Feb. 14th, 1935, p. 283), Dr. Richard H. Miller made a plea for early operation and also advocated frequent irrigation of the operation wound with renewed packings, under strictly aseptic conditions, during the acute stage. Some of the subsequent speakers did not agree with him; thus Dr. Robert B. Osgood recommended that where osteomyelitis is established and the child is very ill, an attempt should be made by means of sedatives and fluids to restore general condition and resistance before operation is attempted. He holds that in some of these cases the surgeon will do well to wait for 12–24 hours. Dr. William E. Ladd went further in advocating a delay of two or three days in certain cases, and, in his reply, Dr. Miller agreed that there were cases in which a period of restoration might be necessary. A sharper division of opinion arose concerning the value or harm of frequent dressings. Osgood expressed himself as strongly in favour of the Winnett Orr method, in which the limb is encased in plaster, and dressings are reduced to a minimum; and Dr. Lyman Allen maintained that irrigation is unnecessary and that frequent dressings in young children are actually harmful. The method to be used in localising the pus, in cases where subperiosteal suppuration has not occurred, was also discussed. Miller favoured repeated drilling of the bone with a ¼-in. burr until pus is reached, whereas Osgood considered that this carries the danger of infecting healthy bone; it is much better, he thinks, to remove a generous cap of cortex over the metaphysis and, using a strong direct light, to search gently with a probe for the focus of infection, and to determine its extent before instituting drainage. Allen believes that opening of the marrow cavity may be unnecessary, drainage being limited to a localised abscess in the cortex. Various warnings were uttered against excessively radical operation on children under two years old or in neglected cases first seen 2–4 weeks after the onset; and Ladd said that with small infants his practice at the first operation was to open the periosteum only. In this connexion interest attaches to Osgood's opinion that in infants the infecting organism is twice as frequently a streptococcus (usually hæmolytic) as a staphylococcus, and that in streptococcal lesions in infants less complete drainage is required.

The importance of making the diagnosis on fever, pain, local tenderness, and the white cell count, without waiting for localised swelling or changes demonstrable by radiology, and the significance of strictly localised pain in determining the part of the bone affected, were clearly brought out in the discussion.

HEAD-REST FOR THE BATH

THE head-rest here illustrated meets a need which must have been felt by many bath-users—if inarticulately. Its chief appeal will be to those who like to revel in hot water, and on persons of irresolute character its influence may thus be anti-social rather than otherwise. As an aid to nursing, however, it should more than redress the balance, for there is always difficulty in supporting the head and shoulders of a patient while attending to the other operations of the bath, and the head-rest may mean that one nurse can do the work of two. Furthermore, it will allow a person to lie in comfort in a medicated bath, with the shoulders submerged—a situation not easily arranged otherwise. The model now available at the principal druggists and large stores is made of rubber and stainless steel, and should give full satisfaction; the straps are adjustable to fit any width of bath. The name given to it is the "Heavenly" bath head-rest, and it is produced by Louisa Slater, of London.



SHAKESPEARE AS PSYCHIATRIST[1]

THE psychological wisdom displayed by Shakespeare has been the subject of comment, learned and otherwise, in many countries and for many years. To the number of writers on the subject may now be added Dr. André Adnès, who occupies an important residential post in a French mental hospital. He was induced to write the book because in his opinion of all the great dramatists Shakespeare more than any other had depicted accurately the aspects of mental disorder. This fact has struck many writers medical and lay before, as is evident from the copious bibliography supplied by Dr. Adnès, which moreover is far from complete. The remarkable familiarity with the outward aspects of insanity which may be seen in so much of Shakespeare's writing undoubtedly had its origin in the fact that in the absence of institutional provision the person of disordered mind, when not actually secluded as though a criminal, lived with the general population. His divagations from the normal were therefore so well known to general observation that Shakespeare could rely upon his descriptions being readily appreciated. Dr. Adnès must be congratulated upon his accurate knowledge of his subject. "Le xviie. siècle anglais," he writes, "qui devait donner au monde médical Harvey, le physiologiste, Sydenham, clincien et thérapeute, et Willis, neuro-pathologiste, vit à son début, William Shakespeare, auteur dramatique publier des observations psychiâtriques remarquables, dont la vérité clinique n'a pas vieilli; au courant de toutes les théories scientifiques de son temps, il nous les expose au complet, sans systématisation, en les illustrant d'exemples; il nous présente encore toutes les croyances populaires et superstitieuses d'alors. Shakespeare nous apporte sur la folie et son traitement à son époque la documentation la plus complète que nous possédions." He supports this magnificent claim for Shakespeare by analyses of scores of characters from "Hamlet," and "Lear," and other protagonists of the great dramas down to the holders of quite minor rôles, and supplies in doing so a learned and well-written chapter in medical criticism.

A MAP OF LONDON FOR EASY REFERENCE

WE have received from the Lightning Cities and Road Map Co., Ltd. (20, Holborn, London, E.C.1), a plan of London, city and suburban, with a system of reference by which any place name can be found in a few seconds. The map, although it covers the whole of London, from Golders Green and Leyton in the north to Kingston and Chislehurst in the south, on a scale of three inches to the mile, is contained in a folder 9½ by 6½ in., and need never be stretched out. The index must contain more than 16,000 names, to each of which two numbers are attached corresponding with figures at the side and top of the folder. To identify a street it is only necessary to find these figures, and to note where the verticals from these points meet on the plan. The map has been printed in five colours by the Ordnance Survey and indicates railways with red stations above and below ground, yellow omnibus and tram routes, green spaces, and blue sheets of water. It has evidently been brought carefully up to date. The map is called the Lightning Plan and is well worth 4*s.* 6*d.* It may well serve the practitioner's purpose better than an expensive atlas. It is proposed to publish on a similar principle a motor map of England and Wales on a scale of three miles to the inch in fourteen sections.

UNIVERSITIES YEAR BOOK 1935.—Sir Frank Heath's name no longer appears on the title-page of this admirable compilation, as he retired from the office of editor after preparing the five issues, 1930 to 1934. The Year Book contains no new features, but there is evidence of increasing care and promptitude in the returns made by registrars and others, and it can be counted upon more than ever for giving recent and precise information about any of the universities of the Empire, which now number seventy. The Year Book is published by Messrs. G. Bell and Sons at 15*s.*, and it is accompanied by a notice that the fifth quinquennial congress of Universities of the Empire, organised by the Universities Bureau, will be held at Cambridge from July 13th to 17th, 1936.

REGISTER OF VETERINARY SURGEONS.—We have received from the Secretary of the Royal College of Veterinary Surgeons (10, Red Lion-square, London, W.C.1) a copy of the Register revised up to Jan. 1st, 1935. The total number of registered veterinary surgeons at that date was 3440, being 31 more than a twelvemonth earlier. During the year 1934 81 deaths were recorded and 6 names were removed for other reasons, which were more than counterbalanced by 115 new graduates and 3 names restored. The second list in the Register, being existing practitioners registered under the Act of 1881, is diminished to 23. The volume which is published under Parliamentary authority contains the by-laws of the College and much information about qualifying for the veterinary profession. It is to be obtained from the College for 5*s.*, which is also the price of the separate volume of Acts and Charters.

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[1] Shakespeare et la Pathologie Mentale. By Dr. André Adnès, de la Faculté de Médecine de Paris; Interne des Asiles de la Seine. Paris: Librairie Maloine. 1935.

ADDRESSES AND ORIGINAL ARTICLES

SO-CALLED ACIDOSIS ATTACKS

A PLEA FOR MORE ACCURATE DIAGNOSIS*

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ONE of the commonest diagnoses in children's medicine to-day is that of "acidosis." Hardly a day passes that I do not see a case named as such. The symptoms with which the children present themselves are usually fever, vomiting, or diarrhœa, with pale motions; and of late I have noticed a slight tendency on the part of some doctors and parents to doubt whether the explanation covers the facts.

By acidosis is meant the formation of ketone bodies in the blood and urine; that is, the presence of acetone and diacetic acid on the breath, in the blood, and in the urine. Biochemical acidosis, brought about by the shift of the pH of the blood to the acid side, induced by mineral acids, is not what is usually meant by the term as it is used in the clinical sense. It is the *clinical* meaning of acidosis or ketosis which I propose discussing.

The metabolism of the fats is profoundly influenced by the balance between fats and carbohydrates, and if the carbohydrate in the form of starches and sugars be insufficient, the fat will be only partially broken down, and acetone and diacetic acid will be formed. This may be brought about because the amount of carbohydrate absorbed is insufficient, or because too much fat is being given. The usual sequence of events, however, is that the carbohydrate present in the food, and stored in the muscles and liver, is suddenly called upon and used up during an infection. The body, deprived of carbohydrate, looks to its store of fat for energy, and ketone bodies are formed as a result. It may be said then that it is normal for each and every individual with an acute infection to form ketone bodies, and it has been common knowledge for many years that acetone and diacetic acid are the usual constituents of the urine of acutely febrile children. Put shortly, there is nothing very unusual or strange about the presence of ketone bodies in the urine of infected children.

Now what symptoms arise as a result of acetone and diacetic acid being present in the blood and urine of an infant or child? It is difficult to assess the part they play, but a series of experiments done under my eye in the Westminster Hospital some years ago by R. W. B. Ellis[1] impressed me by the lack of clinical signs and symptoms associated with ketogenic diet. The diet used was—

8 A.M.: Olive, half, ½ oz.; ol. morrhuæ, drachms 3; fried fish or sardines, 2 oz.; top milk, 6 oz.; bran biscuits, ad lib.; one slice of white bread; butter, 1 oz.

12.30 P.M.: Minced beef, 3 oz.; cabbage, 2 oz.; butter, 1 oz.; olive oil, ½ oz.; ol. morrhuæ, drachms 3; top rice-pudding, 1 oz.

4.30 P.M.: Fat ham or bacon, 2 oz.; butter, 1 oz.; top milk, 6 oz.; olive oil, ½ oz.; ol. morrhuæ, drachms 3; bran biscuits, ad lib.

Normal children were put on this diet until the urine was heavy with acetone, but apart from a poor appetite and a stationary weight chart they had no symptoms. There was no vomiting, languor, sighing respiration, pallor, or other symptoms so commonly attributed to the presence of acetone; in fact, they were clean-tongued and cheerful, though they lacked appetite or wish for food. The same result may be seen in the epileptic child having a ketogenic diet, and left on it for many months. No great difficulty is found in maintaining the diet, and few symptoms arise from it.

I would stress the fact, then, that in the vast majority of children acidosis or ketosis by itself leads to little or no change in the clinical picture. We must conclude that the symptoms attributed to "acidosis" are produced by the factor which produces the acetone—and this is usually an infection.

Cause of Cyclical Vomiting

To throw some light on this problem, let me turn to the old-fashioned condition termed "cyclical vomiting," which in its extreme form is a comparative rarity to-day. Usually it is described in this way—a thin, nervous child, of neurotic unstable stock, gets recurrent bouts of vomiting at short intervals, possibly every three or four weeks. These attacks are ushered in by yawning, pallor, lassitude, and irritability for a few hours, and during this period the sweet smell of acetone may be detected on the breath. The temperature is found to be raised, but not particularly high. A few hours later vomiting commences. This is so severe that not even a teaspoonful of water is kept down. The child rapidly becomes sunken and drowsy, the abdomen is scaphoid, and finally the vomit may be coffee-ground, or may even contain bright blood. After two or three days the vomiting suddenly ceases, and in the most dramatic fashion the child recovers. An examination of the urine throughout shows the presence of acetone and diacetic acid. There is often a complaint of abdominal pain or discomfort, but usually this *follows* the vomiting rather than precedes it.

Children with typical cyclical vomiting have been admitted to hospital, in various parts of the world, for investigation. Findlay[2] found that a cyclical vomiter, just recovering from a typical attack, continued to improve, and recovered well, while actually on a ketogenic diet, and he was unable to cause attacks of vomiting in such children by giving them a ketogenic diet while they were in hospital, although their urine contained much acetone. Ellis[1] put two children who were typical cyclical vomiters and also two children who had had fever and convulsions (with acetone in their urine and cerebro-spinal fluid) on a high fat-low carbohydrate diet; and although all developed a marked ketosis, and the cerebro-spinal fluid of the second two contained much acetone, no vomiting or other symptoms developed.

It appears then that there must be some missing factor, other than the production of acetone, to account for the clinical picture in cases of cyclical vomiting.

Graham and Morris,[3] who likewise failed to produce symptoms in children on a ketogenic diet, have concluded that a low blood-sugar (hypoglycæmia) is not, as some hold, responsible for the ketosis or vomiting; for the children they investigated showed a normal or, in fact, a raised blood-sugar. Their investigations have led them to believe that there is an impaired hepatic function; they have found urobilin in the urine during an attack, and the lævulose-tolerance test bears this out. Holt and McIntosh,[4] on the other hand, think that cyclical vomiting is associated with neurotic stock, and that a low blood-sugar plays a definite part in it. John Thomson[5] maintained that the liver showed an accumulation of fats, especially in neurotic children, and that there was some connexion between these attacks and migraine, sick headache, asthma, and eczema.

Bray,[6] discussing migraine, suggests that most cases of cyclical vomiting in childhood are, in fact, abdominal migraine, but he points out that the attack of migraine rarely lasts more than 24 hours. It recurs at very frequent intervals, from two to three times a week to once a month, and acetone is not commonly present. Headache is usually prominent. Payne[7] regards cyclical vomiting as a metabolic disturbance centred in the liver. J. C. Spence [8] holds that it is due to a recurrent toxæmia from some such cause as tonsillitis or hepatitis. The vomiting and drowsiness are identical with the vomiting and drowsiness seen at the onset of many acute febrile illnesses, and the ketosis is a mere epiphenomenon.

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* Given before the South-West London Medical Society on Feb. 13th.

Reginald Miller [9] says that cyclical vomiting attacks are due to an acute poisoning of the liver, which often shows itself by pale stools, and he suggests that a diminished glycogen reserve in the liver renders that organ vulnerable to poisons, and certainly an intestinal toxæmia. He thinks that the withholding of a normal supply of fat in the diet is unnecessary, and may be harmful.

An excellent description of cyclical vomiting, and of the child most prone to such attacks, has been given by H. C. Cameron[12] in his book "The Nervous Child"; but it seems to me that he puts too much emphasis on the constitutional and psychological side, and on the effects of the ketosis. He points out the value of carbohydrate, especially glucose, in such cases, but he evidently does not consider infections as a common cause of the symptoms described.

Most authorities agree that cyclical vomiting is a metabolic disturbance; they cannot decide whether this disturbance is due to infective, dietetic, psychological, or allergic factors. My own feeling is that far too little stress has been laid on infection as the cause of the attacks. There can be no doubt that the vast majority are accompanied by fever, especially at the start, and that the old term "chill on the liver" describes the condition extremely well. Unfortunately even the absence of fever does not exclude infection.

A boy, aged 5 years 9 months, was seen by me on Jan. 19th, with a normal temperature and normal ears, at 10 A.M. At 4 P.M. he complained of slight earache, and at 10 P.M. his drums were red and inclined to bulge. For the next day or two the situation remained unchanged; then they gradually subsided. At no time was the child's temperature more than 98° F., and the urine contained acetone throughout.

Very often the practitioner is asked to see the child when the vomiting has already begun. A full 24 hours or more may have elapsed since the prodromal symptoms appeared, and the signs of infection are then less obvious. Children show widely differing reactions to infections. On the one hand you have slight nasal catarrh, accompanied by diarrhœa, or acute tonsillitis accompanied by a high fever and vomiting. A thin, nervous, wiry child may show little or no outward sign of his infection; nevertheless, it may be present.

Post-mortem examinations of cases of cyclical vomiting show conspicuous fatty changes in the liver. Urobilin in the urine and indeed definite jaundice have sometimes developed in typical cases, and I think one should assume that the underlying pathology always includes some degree of cloudy swelling of the liver cells, brought about by an infection—most often a passing cold or sore-throat.

Dangers of Diagnosing Acidosis

When a doctor is presented with a feverish and vomiting child who has acetone in the urine, an acceptance of the diagnosis of acidosis carries with it grave risk of missing gross organic disease. I have often seen cases wrongly given this diagnosis, and later proved to be abdominal tuberculosis, appendicitis, pyelitis, typhoid, or lobar pneumonia. There are classical cases, some of the best being those reported by Poynton,[10] in which partial volvulus of the small intestine gave rise to symptoms of vomiting with abdominal pain, and the production of much acetone and diacetic acid. There is a great tendency for the volvulus to right itself and then recur a few weeks or months later. In such cases the abdomen is distended, and the pain marked, whereas in the true cyclical vomiter there is a scaphoid abdomen, and the pain follows the vomiting instead of preceding it.

A practitioner should pause, therefore, before making the diagnosis of acidosis, all the more when reminded that it is one very little used in a children's hospital. For instance, out of many thousands of admissions, over a period of ten years, it only appeared six times at Great Ormond-street.

The usual case which a practitioner is called to see and treat is not one of the extreme degree which I have depicted, but merely of a feverish child who has had probably less than half a dozen vomits, and who has an offensive breath, dirty tongue, pale stools, and a disinclination for food. After a day on light fat-free diet, the patient is well or nearly well, the whole thing being over in two or three days. A careful examination of the nasopharynx and ears will usually reveal the presence of an infection.

Treatment of Cyclical Vomiting

When two or three of these attacks have occurred, and the label of "acidosis" has been attached to them, it is said that such children tolerate fat badly, and they are put on a diet extremely low in fat and high in carbohydrate. This usually contains little or no milk, and what is given has been skimmed. Extra glucose is given during the day, in varying quantities, and vitamin D may be added. The low-fat diet may be continued for many months, or even years, but this I believe to be a complete mistake. During the actual attack fats in the form of milk, butter, cream, egg-yolk, dripping, and oils, including cod- and halibut-liver oil, should be rigorously excluded; but once the attack is over the child should be put back once more on to a normal diet. It is reasonable to expect, especially in slight cases, that an interval of a few months may pass, even if nothing is done in the way of prevention, before another attack need be expected, and I believe it to be a mistake to deprive a child of a normal diet because of the chance of another attack.

If you were faced with the treatment of a case of epilepsy in which a child had a fit once or twice a year, would you give bromide or some other drug each and every day to prevent that remote possibility? I doubt it. If, by keeping the child who gets acidosis on a rigorous low fat-high carbohydrate diet continuously, one were sure of preventing further attacks, there might be some slight grounds for doing it, but this is not so. In my opinion, the next sharp infection —such as influenza, scarlet fever, or acute sore-throat —would produce another of the attacks; and a straightforward infection, which ought to be easily understood, becomes shrouded in a mist of words such as "acetone" and "acidosis."

In the treatment of an acute attack most careful examination is necessary to exclude organic disease. A good view of the throat must be obtained at the risk of causing further vomiting. The ears should be seen and the abdomen carefully palpated. The mother should be questioned as to the presence of abdominal pain, and it should be especially noted whether the pain preceded or followed the vomiting. If it preceded it, abdominal disease of some description should be suspected and searched for. The lungs should not be forgotten, for a deep-seated lobar pneumonia may begin with fever and vomiting. Once the practitioner has made up his mind that this is a mild infective hepatitis, the administration of glucose, either in its fluid form or as powder by the mouth, or with saline subcutaneously, rectally, or intravenously, should be proceeded with immediately, especially if the vomiting is severe. In severe cases I have seen patients become comatose, and even die, for lack of treatment.

It is impossible to know when a simple case may become a more severe one, so each attack should be taken seriously. Where there is much vomiting constipation is usually present also, and advantage should be taken of this fact to give rectal saline and glucose. The help of the district nurse should be obtained. Even if the saline and glucose is returned, it will cause the bowels to be opened, which is an advantage. Where there is diarrhœa, vomiting is usually much less severe, and the giving of glucose by the mouth will rapidly remove the acetone and provide the body with easily assimilated food which requires little or no work on the part of the liver.

Where an obvious nasopharyngeal infection exists, treatment of the throat with powdered aspirin, or the bulging red ear-drums by incision, will bring about cessation of the vomiting. It is seldom a good thing to give bicarbonate of soda to these children after the vomiting has commenced.

Prevention

Most good can be done in the prevention of the attacks. If the primary infection be in the tonsils and adenoids these should be removed, and in my experience this has prevented the vast majority from having further attacks. Occasionally, especially in girls, examination of the urine will reveal pus, showing that each attack was really a recurrence of acute pyelitis. A well-balanced diet will maintain a better standard of health and nutrition, and thus lay the child open to fewer infections, so that fewer attacks are precipitated. So often one sees the victims of an anti-acidosis diet with every tooth stopped, a thin emaciated body, and a dry skin. The treatment has made the child much more ill than the actual attacks themselves.

A diagnosis of acidosis often suggests that the fault lies in the mother or nurse, and that their dieting and management have been at fault. Surely this is an unfair assumption. The prevention of ordinary infections by the strict isolation of children with common colds is becoming commoner. The mother of a child especially prone to chills on the liver may do much to forestall an attack by watching the stools daily; when they become pale she can reduce the fat temporarily and administer some mild saline aperient. Whenever possible she should isolate the child from other children in the nursery who have colds, and at the first of the prodromal signs of yawning, lassitude, and pallor, which to me indicate the onset of an infection rather than only the formation of acetone, she should promptly administer glucose and summon the doctor. He may see fit, in appropriate cases, to give a little aspirin and a purge, and a great many of the attacks can in this way be aborted or checked before they really start.

I would sum up in this way: that the diagnosis of acidosis is a bad one, and should never be used. We ought rather to think of the process underlying this clinical picture. This will rarely be found to be primarily dietetic, but rather infective in origin. A search for the source of the infection, usually nasopharyngeal, should be made, and this should be treated. Prevention depends on educating the mother to be on the alert for the first signs of liver infection which gives rise to this symptomatic vomiting.

(*References at foot of next column*)

A STUDY OF PNEUMOCOCCAL PNEUMONIA

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With the support of

THE ROYAL COLLEGE OF PHYSICIANS OF LONDON

III*

THE RADIOLOGY OF PNEUMONIA

(WITH ILLUSTRATIVE PLATES)

THE radiological changes caused by acute inflammatory diseases of the lungs have not been studied so extensively as those due to chronic diseases, partly because of difficulties in technique and partly because the patient is often too ill to allow of more than the briefest examination.

This paper is based on the radiological examination of 119 cases of pneumococcal pneumonia, and the results have been correlated with the clinical and bacteriological findings; during the investigation approximately 1500 radiograms were taken. The patients were all collected in one ward and in order that exposures should be as short as possible a four-valve transformer, capable of an output of 400 milliamperes at 85 KV., was installed. A tube stand was built for the work, which would give a tube-film distance of 6½ feet above the beds. With this apparatus the exposures varied from 0·02 second for a child, to 0·1 second or a little over for an adult. The bed, which was on castors, was wheeled beneath the tube stand, and the exposures were made, with almost no disturbance of the patient. Radiograms were taken every second or third day. The tube was centred in the supine position at the level of the third costal cartilage.

Radiographic Characteristics

In order to appreciate the varying appearances in lobar pneumonia—and these depend largely on the lobe involved—one has to visualise the location and direction of the interlobar fissures (see accompanying diagrams). The two drawings on the left show the lung as seen in the antero-posterior and postero-anterior planes; those on the right show the lateral

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* This section of the work was done with the assistance of Dr. T. V. L. Critchlow, to whom we wish to record our gratitude. Parts I. and II. have appeared in the last two issues of THE LANCET.

DR. D. PATERSON: REFERENCES

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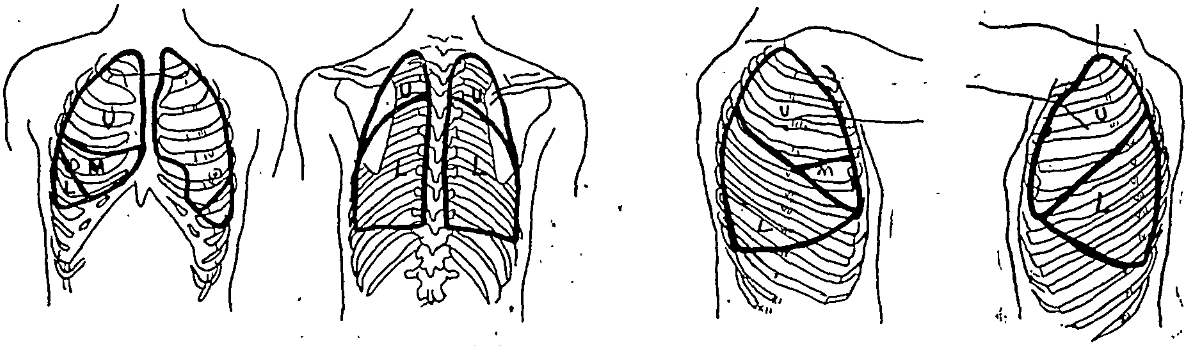
11. Cameron, H. C.: The Nervous Child, London, 1933. chap. xiii.

aspect of the lobes. The diagram of the right lung illustrates that the upper lobe presents prominently on the anterior chest wall, while the lower lobe is mainly in contact with the posterior chest wall. The middle lobe is wedge-shaped, and does not come in contact with the posterior wall, its farthest point posteriorly being the hilum, where the interlobar pleura divides (Fig. I. on Plate). On the left side the upper lobe corresponds to the upper and middle lobes of the right.

Consolidation in lobar pneumonia takes place very rapidly as judged by radiograms; for characteristic appearances are usually well marked throughout the entire lobe within twenty-four hours of the onset. The opacity of a pneumonic lobe, as seen in the antero-posterior view, is not homogeneous except where consolidation is so intense as to allow no radiographic differentiation in density. The reason for this is obvious from a study of the diagram—namely, that the lobe is wedge-shaped and the density of its shadow consequently diminishes towards the apex. Unless this important fact is borne in mind, an erroneous interpretation may be made. For example, pneumonia confined to the left lower lobe might be interpreted as also involving the base of the left upper lobe (Figs. II.A and II.B).

Mistakes can always be avoided by taking a lateral radiogram, which shows the exact outline of the involved area. Consolidation in the right upper lobe shows a sharply define lower border, and for the same topographical reason middle lobe consolidation shows a sharply defined upper border. The lower border of a middle lobe pneumonia and the upper part of a lower lobe pneumonia show a shading-off in density. Middle lobe consolidation is easily distinguishable in the lateral radiogram because the consolidation is situated anteriorly, while in the antero-posterior plane there is aeration of the costophrenic angle, unless the lower lobe is also involved. Right lower lobe consolidation extends upwards to the third interspace behind; and unless a lateral view is taken, it may be thought that the middle lobe and part of the upper lobe are also involved. Here also the gradual shading-off of the density in an upward direction helps to prevent mistakes. In the left lung, lower lobe involvement gives a shadow similar to lower lobe involvement on the right side. Consolidation of the left upper lobe lacks the sharp lower border of right upper lobe consolidation; and instead there is a hazy lower border, gradually diminishing in density.



Antero-posterior. Postero-anterior. Right lateral. Left lateral.

Diagrams illustrating position of the interlobar septa (after Sante). U=upper, M=middle, L=lower, lobes.

THE EARLY STAGES OF PNEUMONIA

Most pneumonia patients are admitted to hospital late in their illness. Ours were no exception and only a comparatively small proportion were observed in the early stages. Nevertheless 9 were examined within the first forty-eight hours, and 16 within the first seventy-two. In most of these cases the first change noted was an increase in the density and extent of the hilar shadow on the affected side. From the hilum the opacity spreads rapidly towards the periphery, which is the last area to be involved. Even within twenty-four hours of the initial rigor the opacity can be dense and involve a whole lobe without showing any intervening areas of aeration (Figs. III.A and IV.). If the radiogram is slightly overpenetrated and viewed with a strong transmitted light, further details can be seen. Numerous dense thickened "striæ" radiating out from the hilum can be distinguished in the affected region and these are possibly due to the inflammatory engorgement of the vascular and lymphatic tissues.

Coincident with the development of opacity there may be three other changes, but it is hard to say which occurs first, or whether they are simultaneous.

1. The diaphragm on the affected side rises, usually as much as one or two intercostal spaces, regardless of whether a lower or an upper lobe is involved. We have also noticed that sometimes the diaphragm on the unaffected side rises also (Figs. V.A and V.B).

2. The intercostal spaces over the affected lobe or lobes become narrowed.

3. There is occasionally some deflection of the heart and mediastinal structures to the affected side (Fig. VI.). This seems to happen only when the pneumonic process develops very rapidly.

In a few cases—notably in Type III. and Group IV. infections—the X ray appearances in the initial stages are entirely different. Thus the earliest sign may be an opacity at the periphery of the affected lobe and between this opaque area and the hilum there is a zone of normally aerated lung tissue, without any radiological sign of disease. As the disease progresses the consolidation spreads inwards from the opaque area until it reaches the hilum (Figs. XI. and XX.). It is noteworthy that in the peripheral type of pneumonia there may be no definite physical signs until the apex of the opacity has reached the hilum, after which characteristic signs are obtainable.

These two modes of initiation and spread, the "central" and the "peripheral," are quite definite and apparently different. The peripheral spread was in our experience confined to a few cases of Type III. and Group IV. infection.

The opacity increases in density and usually reaches its maximum between the fourth and seventh day; not until resolution begins does it lessen in density. The early appearances have been commented upon by a number of writers. Sante,[25] who has done

DRS. DAVIES,
GRAHAM HODGSON,
AND WHITBY:

A STUDY OF PNEUMOCOCCAL PNEUMONIA

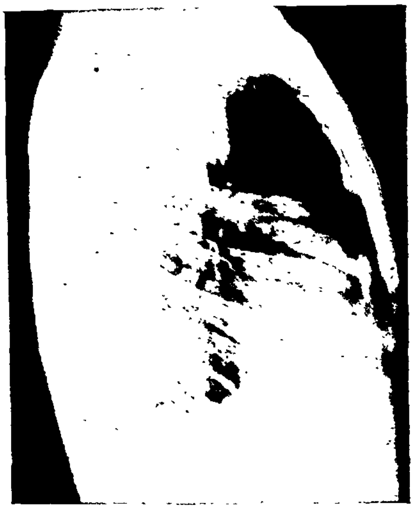


FIG. I.—Lateral view of chest, demonstrating the interlobar fissures of the right lung.

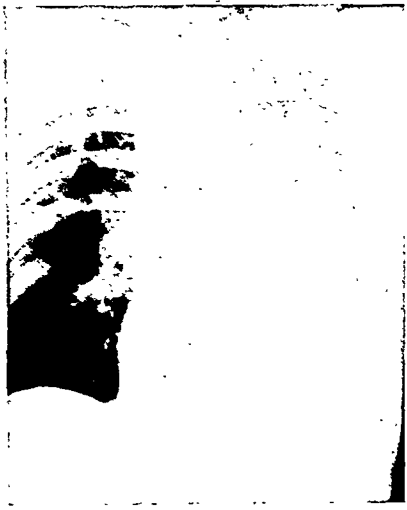


FIG. II.a.—Anteroposterior view, showing opacity of left side of the chest, which might be interpreted as involvement of the lower and upper lobes. 2nd day of disease. (Type I.)

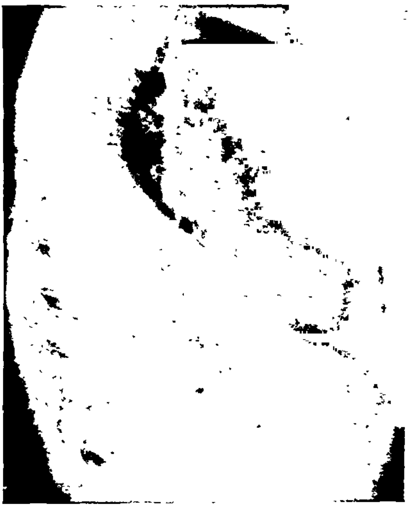


FIG. II.b.—Same case. Lateral view, demonstrating that the opacity is confined to left lower lobe only. 2nd day.

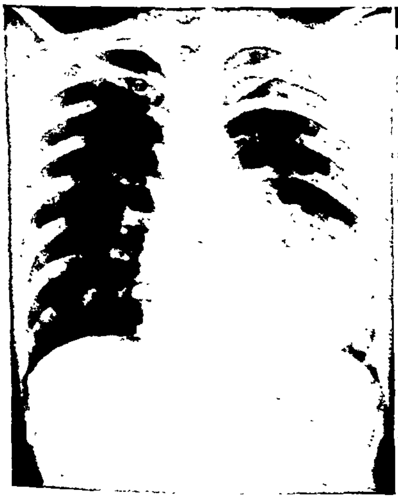


FIG. III.a.—Left lower lobe consolidation, within first 24 hours. (Group IV.)

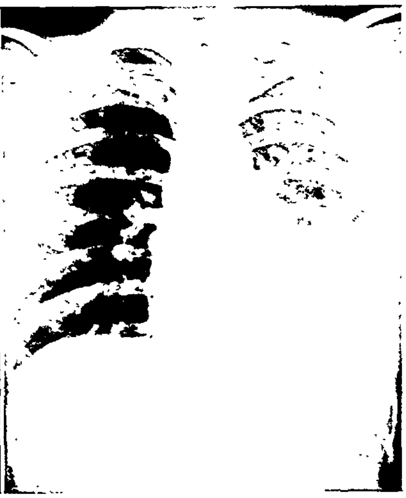


FIG. III.b.—Same case on 23rd day. Hilar glands not enlarged. Delayed resolution.

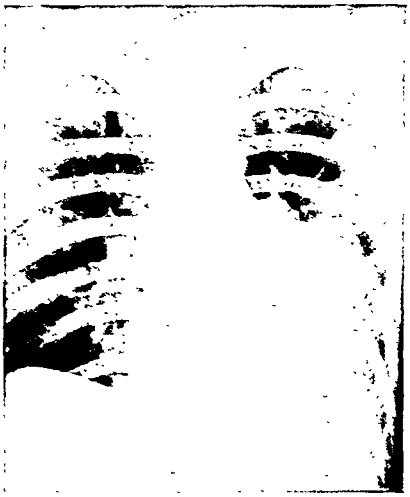


FIG. IV.—Left lower lobe consolidation in first 30 hours. Note the "hazy" opacity spreading to periphery. (Type I.)

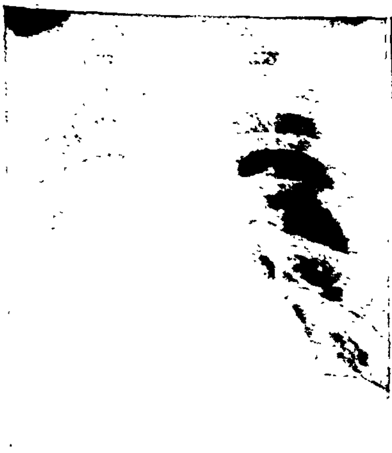


FIG. V.a.—Right lower lobe consolidation with elevation of both diaphragms: right diaphragm at lower border of fourth rib; left at upper border of fifth rib. 4th day of disease. (Group IV.)

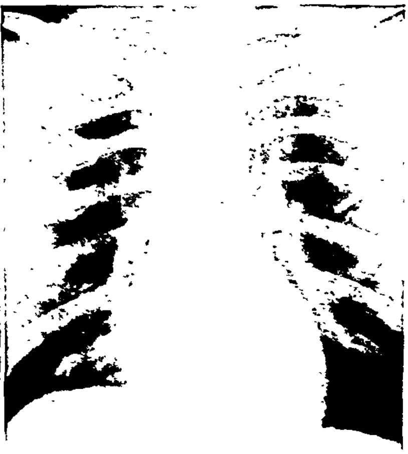


FIG. V.b.—Same case on 35th day. Note level of diaphragm now: right, upper border of sixth rib; left, upper border of seventh.

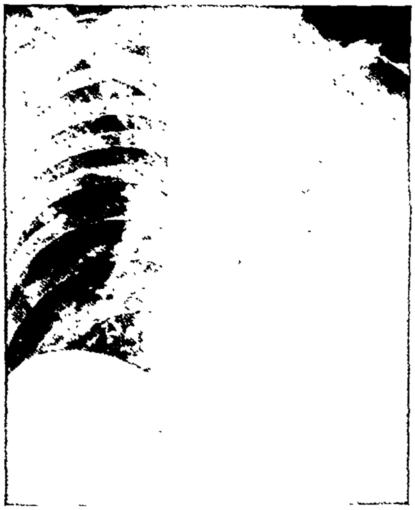


FIG. VI.—Left lung consolidation. 4th day of disease. Trachea and heart displaced to the affected side. (Type I.)

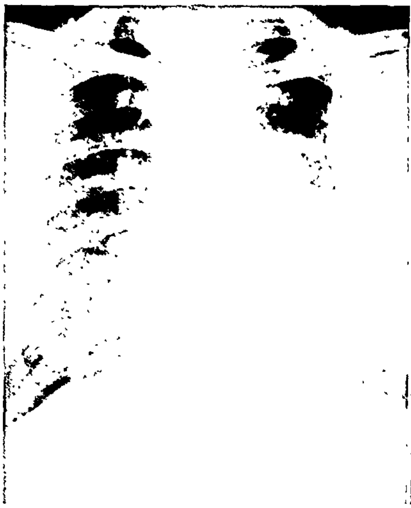


FIG. VII.a.—Left lower lobe consolidation within 24 hours of onset. Opacity spreading towards the periphery. (Type I.)

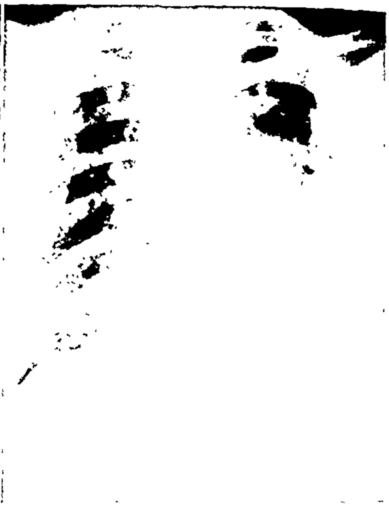


FIG. VII.b.—Same case on 9th day. Crisis on 3rd day under serum treatment but progressive consolidation up to 9th.

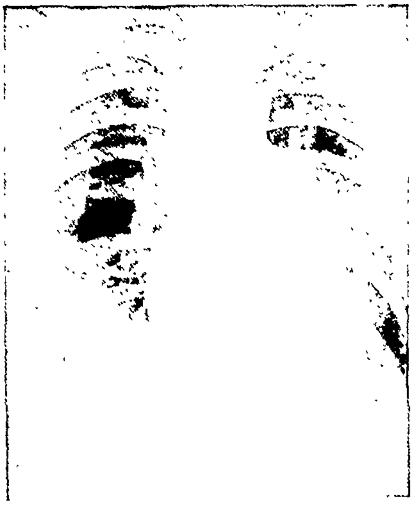


FIG. VIII.—Right lower lobe and left lower lobe consolidation, within first 30 hours. (Type I.)

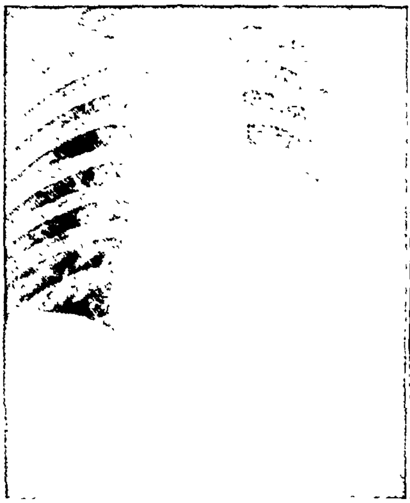


FIG. IX.a.—Left lower lobe consolidation. 6th day. Obvious enlargement of hilar glands. (Type I.)

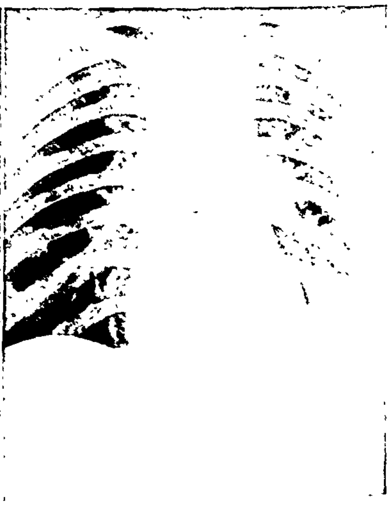


FIG. IX.b.—Same case on 11th day. Rapid resolution. Enlargement of hilar glands. Left diaphragm remains at a high level.

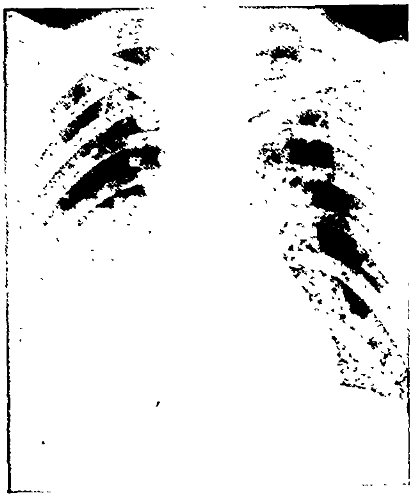


FIG. X.a.—Right lower lobe consolidation. 7th day. No evidence of effusion. Right diaphragm at fourth rib. (Type I.)

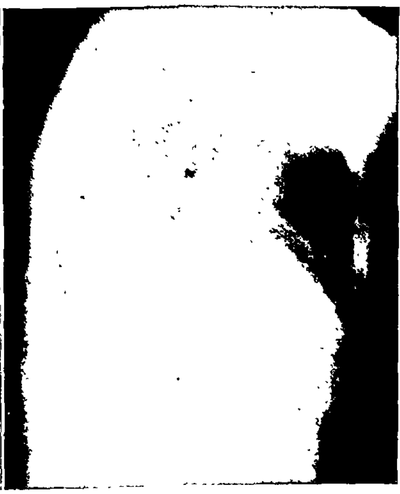


FIG. X.b.—Same case on same day. Lateral view, showing no effusion.

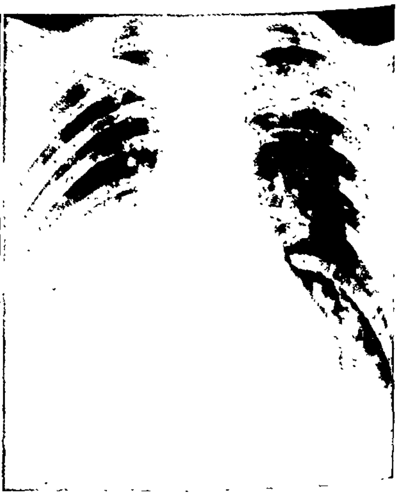


FIG. X.c.—Same case on 11th day. Still no evidence of effusion. Clinical signs suggested early empyema and pus was aspirated on the 12th day. Rib-resection eventually necessary.

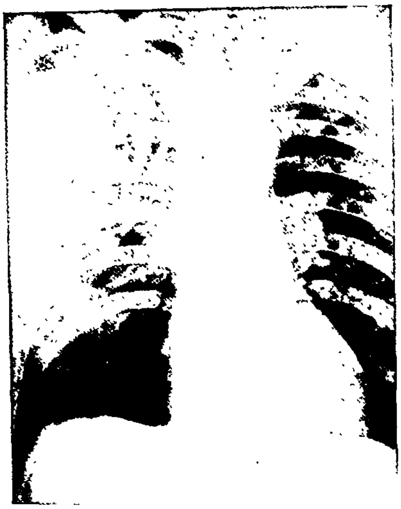


FIG. XI.—Right upper lobe consolidation. 3rd day. Peripheral type of distribution. (Group IV.)

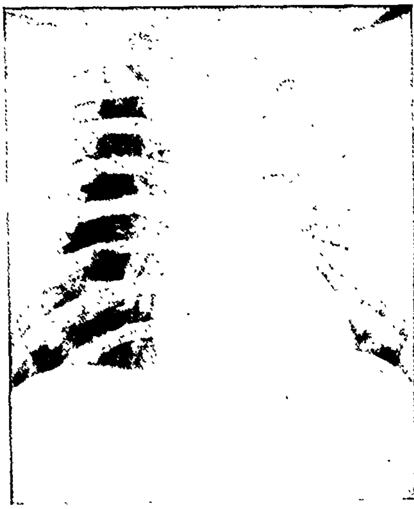


FIG. XII.a.—Left upper lobe consolidation. 7th day. "Hazy" opacity. (Type I.)

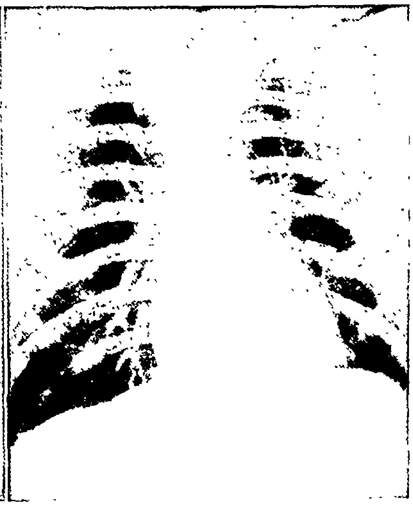


FIG. XII.b.—Same case on 14th day. Almost complete resolution.

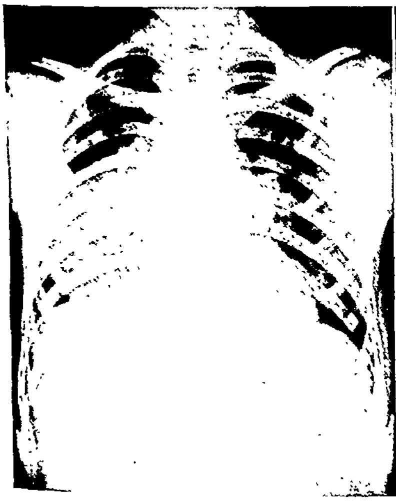


FIG. XIII.a.—Right lower lobe consolidation. 4th day. Note left hilar shadow enlargement. Right diaphragm at fifth rib. (Type I.)

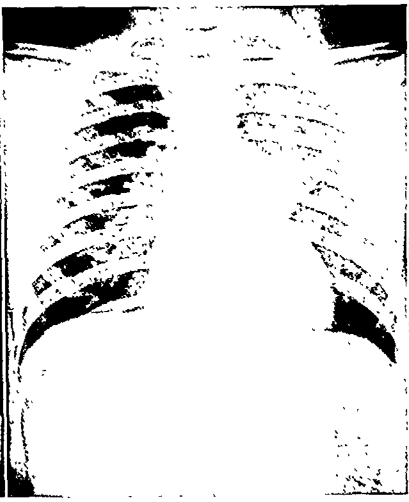


FIG. XIII.b.—Same case on 16th day. Right base cleared completely. Left hilar shadow extending. Clinical signs now apparent over this area. No constitutional symptoms. Right diaphragm at sixth rib.

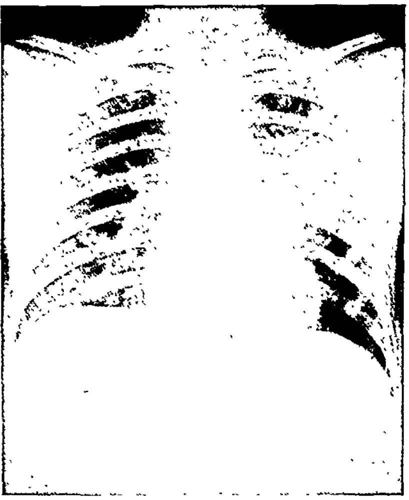


FIG. XIII.c.—Same case on 28th day. Left hilar shadow has extended to involve a large portion of lung. Right diaphragm still at sixth rib.

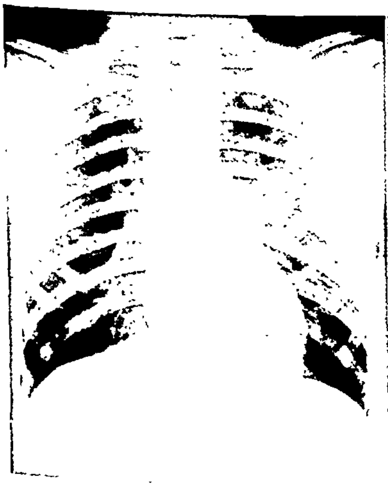


FIG. XIII.d.—Same case on 170th day. Left hilar shadow. Slow resolution. Right diaphragm at seventh rib.

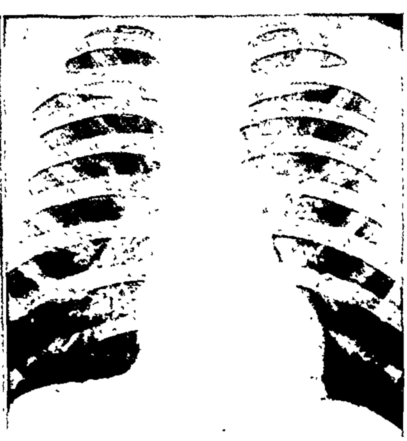


FIG. XIII.e.—Same case two years later. Showing post-pneumonic fibrosis in area previously the seat of slow resolution. Rt. diaphragm at seventh

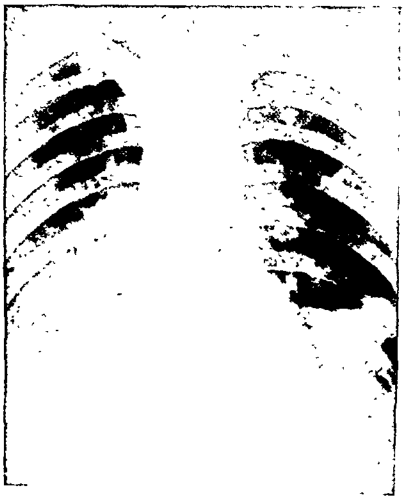


FIG. XIV.—Right lower lobe pneumonia, serum-treated, 2nd day. Small area of consolidation left base, undetected

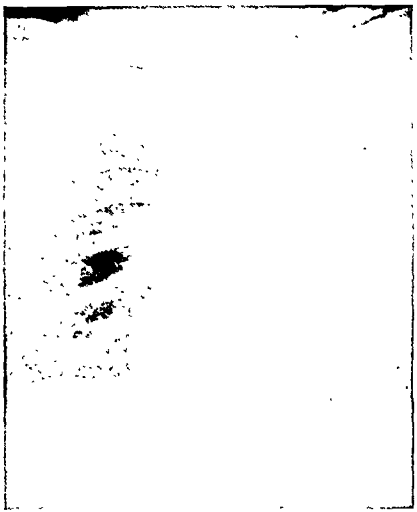


FIG. XV.—Lower lobe and upper lobe consolidation, left side. 15th day. Upper lobe consolidation not detected clinically. (Type I.)

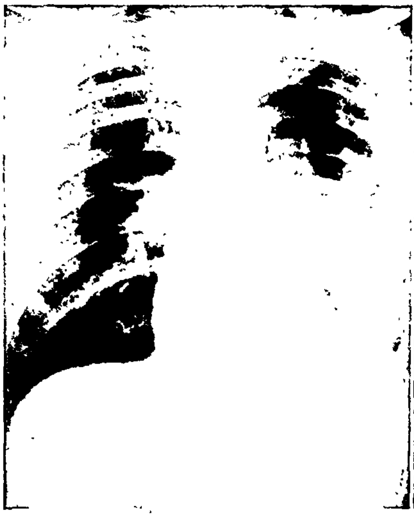


FIG. XVI.a.—Left lower lobe consolidation. 4th day. Calcified glands in both roots. (Type I.)

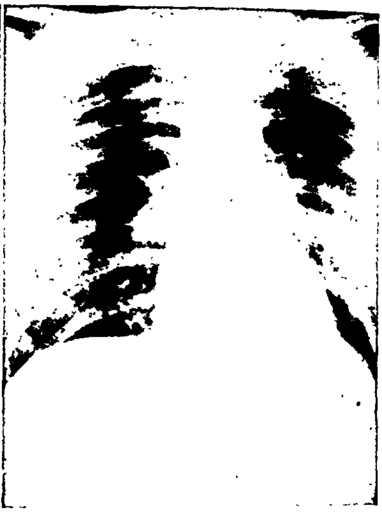


FIG. XVI.b.—Same case on 81st day. Delayed resolution. Calcified glands in roots.

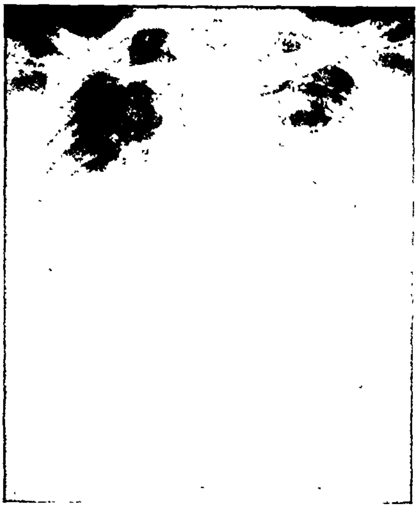


FIG. XVII.—Massive consolidation of both lower lobes. 7th day. Death on 10th day. (Type I.)

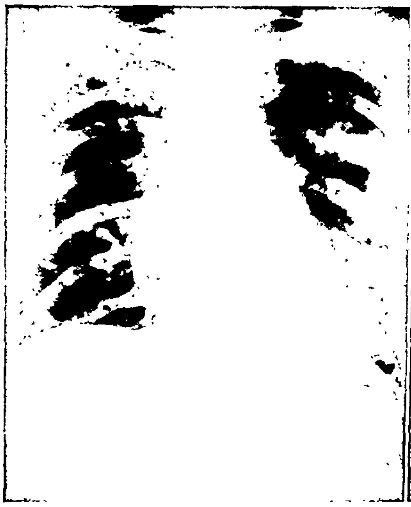


FIG. XVIII.a.—Group IV. pneumonia. 8th day. Scattered areas of consolidation in right upper lobe, right and left lower lobe. Appearances resembling "cavity" in right lower lobe.

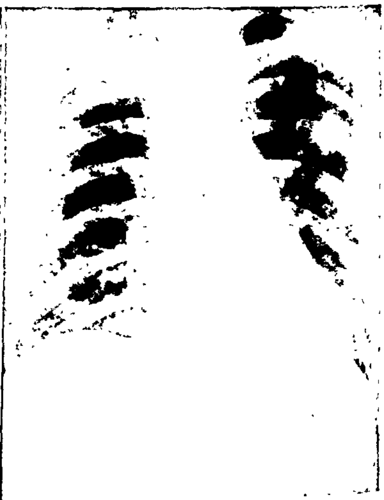


FIG. XVIII.b.—Same case on 55th day. Areas of consolidation still present. "Cavity" in right lower lobe can hardly be distinguished.

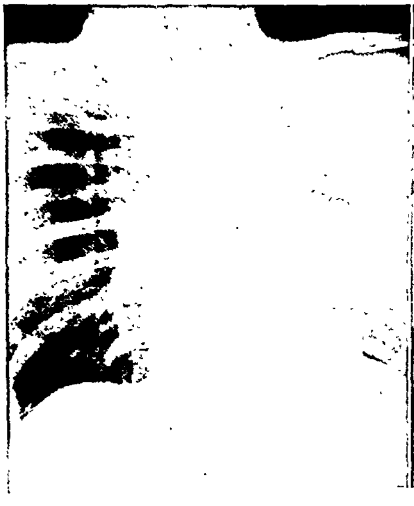


FIG. XIX.a.—Group IV. pneumonia. 18th day. Scattered areas of consolidation in left lung. "Cavity" in left upper zone barely perceptible.

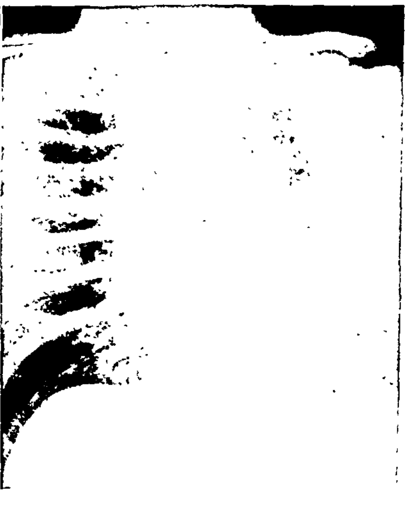


FIG. XIX.b.—Same case on 33rd day. "Cavity" in left zone more conspicuous.

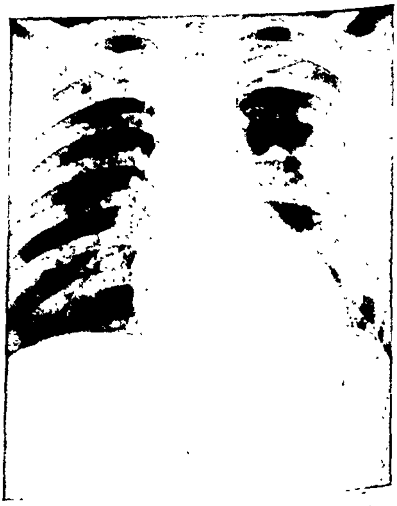


FIG. XX.—Left lower lobe. Peripheral form of consolidation. Atypical clinical signs. (Type III.)

much work on the subject, found dense consolidation within the first twenty-four hours and maintained that the central mode of spread is by far the commoner. This view has been criticised by others but our results confirm it. Mason [26] and Weill and Mouriquand [27] state that in children (in whom a Type I. or II. infection is rare) the peripheral form of spread is more usual.

The rapidity of consolidation is remarkable. Terrell, Robertson, and Coggeshall [28] in an experimental study of pneumonia in dogs found it well advanced within the first day, and also noted elevation of the diaphragm. In 42 dogs out of 105 definite mediastinal displacement was recorded; where the pneumonic process spread slowly there was little, but when the lobe or lobes were rapidly consolidated some shift was clearly demonstrable.

DOES THE LOBE COLLAPSE?

The recognition of rapid consolidation by means of X rays may throw some light on the mechanism by which it takes place. There are two possible processes: it may be due to spread of the infection from the hilum through the interstitial lung tissue around the vessels and branches of the bronchi, or it may depend on some degree of lobar collapse with infection spreading through the portion thus altered. In support of the latter alternative we found elevation of the diaphragm on the affected side, as well as narrowing of the intercostal spaces, whilst in one case there was a shift of the mediastinal structures. Coryllos and Birnbaum [29] in 1929 drew attention to the similarity between atelectasis and lobar pneumonia, and were led to believe that the two conditions were secondary to obstruction of a large bronchus, the obstruction causing atelectasis, circulatory changes, and pulmonary cellulitis. Their investigations included direct observation by bronchoscopy, and they found that the bronchus was frequently blocked. There is therefore some support for Meltzer's view,[30] expressed in 1914, that "the mere presence of pneumococci in the bronchi is not sufficient to produce a pneumococcal infection, but if a previous cold furnishes the mucous secretion which might occlude several small bronchi the ground is prepared for pneumonia." It must be added, however, that Terrell, Robertson, and Coggeshall did not find mucous plugs in the bronchi of experimental pneumonic dogs until quite late in the disease.

Graeser, Wu, and Robertson [31] lately recorded unmistakable radiological signs of pneumonia in 14 patients within thirty hours of the onset of the pneumonia. Furthermore, they found elevation of the diaphragm on the side of the lesion in 18 out of 29 cases, with mediastinal displacement in 3 out of 40. They also comment upon the rarity of peripheral spread—which was seen in only 2 of the 40 cases.

The evidence is somewhat contradictory, and it remains uncertain how large a part collapse plays in the initiation of the pneumonic process. It is indeed quite possible that there is considerable variation; thus in cases showing very rapid consolidation there may be some associated atelectasis secondary to an accident such as the blockage of a reasonably sized bronchus by a plug of mucus, while in cases with a slower spread the process may be purely inflammatory.

Type I. Pneumococcal Pneumonia

Type I. pneumonia is the classical variety: it is sudden in onset and the physical signs during the illness are usually well defined. It is not surprising therefore that the X ray appearances are also distinct and uniform. Of our own Type I. cases 37 were followed through the infection, and we hope to show close agreement between the clinical and radiological signs, noting also the occasions on which added information was obtained by radiography.

It will be convenient to consider separately those which had no specific treatment (18) and those which had Felton's serum (19).

UNTREATED WITH SERUM

Early signs.—Of this group 2 were radiographed within thirty hours of the onset (Fig. VIII.), and it is interesting to record that in both of them X rays showed consolidation on both sides of the chest, whereas clinical examination had suggested that only one lung was involved.

The *established consolidation.*—The opacity spreads outwards from the hilum, involving the periphery last, and varies in density from hazy to dense. We have used the term "hazy" when the line of the diaphragm could be seen and "dense" when it could not. Of the 18 patients only 4 gave hazy shadows; in 2 of these no physical signs could be detected and in the other 2 they were not characteristic of consolidation. In the 14 in whom the opacity was dense the X ray and clinical findings corresponded closely. In 4 of these, however, radiography showed more extensive disease than was indicated by clinical signs. It was somewhat surprising to find that in only 8 out of the 18 was the pneumonia confined to one lobe, although clinically there were only 2 with definite signs that more than one lobe was involved. Consolidation was maximal on the seventh to eighth day. The average day of crisis was the eighth.

Resolution.—As soon as resolution begins—and not before—the hilar glands on both the affected and unaffected sides show obvious enlargement (Figs. IX.A and IX.B). Accordingly, when a case is radiographed some ten days after the onset it is possible to give an opinion whether resolution has or has not begun. The glandular enlargement which takes place during resolution is quite unlike the enlargement due to old pulmonary disease, where the glands are irregular in outline; here they are globular and appear swollen. The time required for complete resolution is very variable. Some lobes have appeared normal 10–14 days after the onset, while others have shown a delay up to the fiftieth. The average for our untreated Type I. group was 20 days from the beginning of the illness. The rate of resolution presumably depends on the extent of the consolidation and its density. Our experience is that enlarged hilar glands are associated with rapid resolution, whereas calcified glands—the result of past disease—are usually associated with some delay. This will be evident from our description of other Type infections.

Complications.—Two patients who developed empyema showed dense consolidation from the outset. Clinical signs were more reliable than the X ray appearances in revealing this complication (Figs. X.A, X.B, and X.C). It would be irrational to expect radiography to disclose a small layer of pus in an area already opaque through consolidation.

Severity of illness.—Although there were exceptions, we came to regard a dense consolidation as being usually associated with severe constitutional symptoms; a hazy opacity on the other hand was characteristic of the milder forms of pneumonia. Of our 18 cases 8 were classified as mild, and of these 4 showed hazy opacities. The milder the case the more rapid the resolution. An example of this is seen in Figs. XII.A and XII.B, illustrating a case in which clinical signs were indefinite; X ray examination showed a hazy opacity in the left upper lobe, the crisis occurred on the fourth day and radiological signs of abnormality had almost disappeared from the lung by the fourteenth (Fig. XII.B).

Extension of consolidation.—Only one case in the Type I. group showed an extension of the pneumonic process (Fig. XIII.A–E). Despite an early crisis on the fourth day the initial consolidation in the right lower lobe was slow in clearing, and there was much enlargement of hilar glands. From the fifteenth day onwards there was a gradual extension of the left hilar shadow which ultimately involved the whole of the left upper lobe. This gave typical physical signs four days after it was first noted on the X ray films. While the initial consolidation was resolving this shadow extended, and it remained persistent for some considerable time. The patient was radiographed as late as the 170th day, and even then some shadowing was still present. We have observed that while a rapidly forming consolidation often as rapidly disappears, a slowly forming one frequently ends in delayed resolution and sometimes permanent fibrosis.

SERUM-TREATED CASES

Early signs.—Of the 19 in this group 5 were radiographed within forty-eight hours of the onset. In all 5 a definite opacity was seen spreading from the hilum to a lower lobe. The physical signs were equally clear and no difficulty was experienced clinically in outlining the lobe involved, although in one case a smaller area of consolidation on the opposite side was only detected radiologically at that time (Fig. XIV.).

Established consolidation.—Dense opacities were observed in 14 of the cases at the height of the illness, while the other 5 showed only a hazy consolidation and atypical physical signs. In 5 cases the clinical signs did not indicate the full extent of the lung involvement, and it is important to note that in 4 of these it was an upper lobe consolidation that was missed (Fig. XV.). The physical signs of upper lobe pneumonia are, in fact, surprisingly few—as Graeser, Wu, and Robertson have already remarked.

The effect of serum treatment is to shorten the febrile period and induce an early crisis, but no material hastening of resolution was observed in our cases. Indeed, some with few signs of consolidation when serum treatment started on the first day showed progressive consolidation despite an early crisis on the third day (Figs. VII.A and VII.B). The average day of crisis in the first 10 cases which were treated in the second and third day of their illness was the fourth to fifth, whereas the clinical and X ray signs reached their maximum on the seventh. Although the number of our cases is small, we feel justified in stating that, in spite of the dramatic relief afforded by serotherapy, it has no demonstrable local effect on the consolidation.

Resolution.—The most rapid resolution was in a patient treated with serum on the second day. The crisis was on the third, and no radiological signs could be seen on the seventh. In 4 which showed long delayed resolution—up to the ninetieth, fifty-ninth, fifty-first, and thirtieth days—calcification of the hilar glands was present. Of these patients 9 suffered from chronic chest disease, and the average day of complete radiological resolution among them was the thirty-first from the onset of the illness (Figs. XVI.A and XVI.B). In contrast, 7 patients who were previously well and who were free of complications showed complete radiological resolution, on the average, by the fourteenth.

Complications.—There were 3 cases of empyema in this group, and the one which was fatal showed bilateral empyema. In all 3 the consolidation was very dense from the outset.

Extension of consolidation was seen in only one case. The process eventually involved all of both lungs except the right upper lobe (Fig. XVII.)

Type II. Pneumococcal Pneumonia

Type II. pneumonia is more severe than Type I. The toxic pallor and the quiet resignation of the patient contrast forcibly with the high colour and restlessness of Type I. infection. The onset is sudden and the signs of consolidation are usually well defined.

Seven of our patients were studied from the fourth day onwards. The general X ray appearances differed in no way from those seen in Type I., but whereas in the normally progressing Type I. infection the lung cleared up completely, leaving no trace of the inflammation, in Type II. there seemed to be a tendency to a permanent, although slight, increase in the density and extent of the pulmonary striæ.

The relation between clinical and radiological signs was more or less close. The infection was confined to one lobe in 4 of the patients; in the remaining 3 (2 of whom died) two lobes were consolidated. Resolution was complete in a period varying from 12 and 31 days. Enlargement of hilar glands was observed as in Type I.

Type III. Pneumococcal Pneumonia

This form of pneumococcal infection is known to attack the debilitated and aged, and carries a high mortality. The course is often ill-defined, and the onset less sudden than in the types so far considered. Often the signs of consolidation are few. It is not surprising therefore to find that the opacity is unlike that seen in Types I. and II. As a rule it is not homogeneous; frequently it is patchy and generally peripheral in distribution (Fig. XX.). The appearances also differ in that the level of the diaphragm usually remains unchanged. The date of resolution in our series varied between the thirteenth and seventy-second day.

This group, although small, contains most of the features accepted as characteristic of Type III. infections. Of the 12 patients 5 gave a history of chronic bronchitis, and in 3 of these calcification of the hilar glands could be detected. In the cases showing chronic disease of the chest the consolidation was ill-defined and either resolution was delayed or the patient died. In contrast to these older subjects there is another class of patient—younger in years, with better defined consolidation, an early crisis, and more rapid resolution.

It is significant that we have found more disparity between clinical and radiological signs in this group than in any other. No clinical signs were discovered in 4, yet 3 of these showed "hazy" opacities affecting one or more lobes. In only 4 of the 12 was there any close agreement between physical and X ray findings. The reason for this disparity is the absence of any dense consolidation; it is patchy, and more peripheral than central. When a consolidation is lateral and peripheral there is still a good deal of lung surface, both anteriorly and posteriorly, over which a reasonably good note and unaltered breath sounds are audible (Fig. XX.).

Group IV. Pneumococcal Pneumonia

Produced by a variety of non-specific pneumococci, Group IV. pneumonia, although common, is less of a clinical entity than the others. Occasionally the infection is severe, but all grades may be met with, and grading is also evident in the local phenomena; some show well-defined consolidation, while in others there is little evidence of a local lung lesion.

In this group 22 patients were submitted to periodic X ray examination. The opacity as a rule was only moderately dense and the distribution was usually peripheral. In 1 case the appearances closely resembled miliary tuberculosis; in 2 cases large cavities suggestive of tuberculosis appeared and disappeared completely during the illness (Figs. XVIII.A, XVIII.B, XIX.A, and XIX.B). In the majority, the height of the diaphragm remained unchanged. The glands enlarged as resolution commenced, as in the other types. Resolution was complete in some cases as early as the fourteenth day; the average, however, was the thirtieth day.

There was close agreement between clinical and radiological findings when the consolidation was dense, but when it was patchy and hazy the physical signs were as inconclusive as in Type III. infection. In 12 of the cases consolidation was hazy, while 6 showed more extensive radiological signs of involvement than was suggested by clinical examination.

In some of this group resolution was extremely rapid. One patient, a man aged 20, who showed a crisis on the fourth day, had considerable enlargement of the hilar glands, and resolution was complete by the eleventh day. In 6 in whom the hilar glands were greatly enlarged resolution was complete by the fourteenth. On the other hand, resolution was not complete until the thirty-sixth day in a young woman aged 20, and the only apparent explanation of the delay was the absence of any hilar enlargement (Figs. III.A and III.B).

Empyema developed in 2 of this group, and in both of them pus was aspirated on clinical evidence before any change could be seen in the X ray films.

The Heart in Pneumonia

Frequent radiography enabled us to keep close watch for changes in the heart during the illness, but in our whole series of 119 we found only 3 patients in whom there was any definite change in its size. Some films showed a prominent pulmonary cone, but we do not consider this change significant.

We believe that cardiac enlargement during pneumonia is rare, but when it occurs it must be recognised as a sign of myocardial damage, even if only temporary. The three cases deserve a brief description.

1. A boy aged 15, suffering from a Type I. infection with a left lower lobe consolidation. He showed high fever and a respiratory rate of over 40, but his pulse-rate never exceeded 80. The pulse was dicrotic in character, and the blood pressure 80/50. The pulse-rate fell to 50 on the seventh day and gradually quickened to 70 on the fourteenth. The B.P. also rose to 115/70 when convalescence was established. During the acute phase of the illness it was recognised that the boy was in a very toxic state, and he also showed an absence of leucocytosis. His transverse cardiac measurements were:

Day.	Cm.	Day.	Cm.
5th	11	10th	14·5
7th	14	14th	11

2. A man aged 37, with a Type I. infection of the left lower lobe. He was admitted on the seventh day of his illness with a temperature of 102·4° F., a pulse of 128, and a respiratory rate of 36. The blood pressure was 98/70. He was not seriously ill. Crisis occurred on the eighth day and recovery was apparently rapid. The pulse, however, fell rapidly. It registered 60 on the ninth day, 52 on the fourteenth, and 50 on the seventeenth. The cardiac measurements were:

Day.	Cm.	Day.	Cm.
7th	14·6	14th	13·5
9th	14·0	19th	12·7

3. A man aged 25, with a Type I. infection involving the right lower lobe and left base, severely ill and treated with Felton's serum. Crisis occurred on the fourth day. On admission on his first day of disease the temperature was 104·6° F., the pulse 140, and respiratory rate 40. The blood pressure fell to 88/60 on the fourth day, to rise to 110/80 following the crisis. The pulse was 80 on the fifth day, and records between 50 and 60 were obtained during the following ten days. The cardiac measurements were:

Day.	Cm.	Day.	Cm.
2nd	14·2	15th	14·7
4th	15·7	21st	14·5
6th	16·0	24th	12·9
8th	15·2		

These were moderately severe cases of pneumonia and they had no clinical *symptoms* suggestive of cardiac disability. In all three, however, there was a relative bradycardia—in one at the height of the fever, and in the other two following the crisis—and in all three a systolic pressure below 100 was recorded. The increase in cardiac diameter was 3·5, 1·9, and 3·1 cm. respectively.

Levy[32] in 1923 found that the heart shadow enlarged during convalescence in two of his pneumonia patients; these were also examples of pronounced post-febrile bradycardia. These findings suggest "that bradycardia under these conditions is a sign of cardiac exhaustion, even though the rhythm is normal" (Levy). We have since observed this condition in another patient who remained very listless and ill for four days after a pneumonic crisis. There was nothing in the lungs to suggest a cause for the symptoms, but we recognised the potential danger of a post-febrile bradycardia (56) and a blood pressure of 90/60. With "absolute" rest the patient made a gradual recovery.

From these few examples we deduce that bradycardia during or following pneumonia is suggestive of some myocardial involvement; and if this finding is accompanied by a systolic blood pressure below 100, it should be a warning of the necessity for the utmost caution. This is probably the type of patient who (rarely, it is true) dies tragically and suddenly when allowed up too soon during convalescence.

General Discussion

The important questions for discussion are: (1) Does radiology throw any light on the development of the pneumonic lesion? and (2) Is it of practical assistance in diagnosis and treatment?

There is little doubt that the central mode of spread—i.e., a rapid extension of consolidation from the hilum—is the commoner form of the pneumonic process, and in pneumonia of Types I. and II. it was certainly the usual one. On the other hand, in Type III. and Group IV. infections a peripheral focus with subsequent extension towards the hilum was not uncommon.

The rapidity with which a lobe becomes consolidated can be appreciated with the help of radiology. Thus a radiogram taken on the second day of the disease sometimes shows a dense shadow occupying the position of a whole lobe; and Terrell, Robertson, and

Coggeshall investigating experimental pneumonia in dogs found dense consolidations even within the first twenty-four hours. It is indeed difficult to obtain a large collection of clinical material demonstrating the very earliest changes. In the dog it has been noted that when consolidation progresses rapidly there is usually some mediastinal displacement. We found one such case in our human series whilst Graeser, Wu, and Robertson record 3 in a series of 40. Narrowing of the intercostal spaces and a elevation of the diaphragm are commonly seen when there is dense consolidation, and these findings suggest that some degree of lobar collapse, in addition to an acute infection, plays a part in forming the picture we know as lobar pneumonia. The quicker the consolidation the more likely is lobar collapse. Unfortunately our observations do not provide absolute evidence of such collapse; but we are satisfied from the indirect evidence described above that it is operative in certain cases. It is hard to see why infection should so often be limited to a single lobe unless there is some mechanical factor which suddenly makes it vulnerable.

It is sometimes important to make a diagnosis of lobar pneumonia with the utmost speed. A patient with high fever may show inconclusive local physical signs, and if serum treatment is contemplated a decision must be reached at once. Radiography 24–48 hours after the onset should show unmistakable signs if pneumonia is present.

Under various headings we have shown that the consolidation seen with X rays is often more extensive than would be supposed from the physical signs. At post-mortem, too, it is usually well in advance of bedside prophecy. An upper lobe consolidation seems to be the most elusive, and in many of our patients radiography showed lesions in this situation of which there was little evidence clinically. We have also been impressed with the frequency of pneumonia affecting more than one lobe: thus in our Type I. series 16 out of 37 showed abnormality in an adjacent lobe or in the opposite lung, although in only 3 of them we had been able to find signs of more than one lobe being involved. It must be admitted that more than half these 16 cases showed radiological lesions of only portions of other lobes, and there is no doubt that where consolidation is well established and shows on a film as a dense discrete shadow, physical examination is as capable as X rays of delineating the outline of the lobe; small extensions and early extensions, however, are far more easily and accurately discovered by radiography than by clinical methods.

Types I. and II. infection proved the most uniform in their lobar distribution and usually furnished a dense opacity. The greatest variation in spread and density was encountered in Type III. and Group IV. infections. The peripheral form of consolidation, especially in its earliest stages, was associated with indefinite and inconclusive physical signs, and our clinical assessment of the extent and locality of the infection is seen to be especially poor—and inferior to radiography—in Type III. pneumonia. As Mason has pointed out, signs may be absent in "peripheral" consolidation until it has extended to the hilar region.

The rate of resolution of consolidated lung varies considerably; in some patients the lung is normal to all appearances as early as the fourteenth day, whereas in some there is delay up to the fiftieth. In our cases resolution was ordinarily complete by the twentieth day, but generally speaking the older the patient the slower was the process of clearing. In multilobed infections one lobe might be showing rapid resolution while another showed increasing consolidation. Enlargement of the hilar glands was commonly associated with rapid resolution; calcified glands, on the other hand, often meant delay.

The opacity of the consolidated lobe begins to clear at the periphery, and the process gradually extends inwards until the last portion near the hilum becomes translucent. In the course of resolution many peculiar pictures may be obtained: several of our patients showed small "cavities," which gradually thinned out and eventually disappeared, and false deductions might quite easily have been drawn if single films had been taken. It is interesting to note that Terrell, Robertson, and Coggeshall found similar "cavities" in the resolving lung of the dog; they were able to show that these were due to dilated atria or air sacs—the dilatations tending to persist longer than the other changes in the consolidated lung.

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Cardiac enlargement has been found as a complication of only 3 cases, and in all of these it was accompanied by a relative bradycardia, a sign which fortunately is easily recognised.

The effect of serum treatment was closely observed, but we are unable to show any "abortive effect" on the process of consolidation, even though the constitutional symptoms and signs were greatly reduced, and an early crisis was precipitated. It is, of course, possible that the use of serum prevented further extension of the pneumonia.

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EXPERIMENTAL HYPERPLASIA OF THE PROSTATE

By A. S. Parkes, Sc.D., F.R.S.
MEMBER OF THE SCIENTIFIC STAFF OF THE MEDICAL RESEARCH COUNCIL; AND

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The first knowledge of possible endocrine factors underlying abnormal prostatic enlargement has been provided by recent work on the effects of gonadal hormones on the prostate of rodents. The available data suggest that it is not the male hormone, but the so-called "female sex-hormone" œstrin, which may be concerned in this condition. It has been clearly demonstrated (Lacassagne, 1933) that relatively large amounts of œstrin (500 mouse units per week over periods of five months) will produce considerable growth of the dorsal prostatic lobes of the mouse, and that retention of urine and hydronephrosis develop as a result. The initial response of the mouse prostate to such treatment consists of reduction in the number of glands in the dorsal lobes; the glandular cells do not begin to multiply until about four weeks after the beginning of injections. Cornification later sets in, and the alveolæ become greatly distended with keratinised epithelial debris and leucocytes. Lacassagne's observations have been independently confirmed in detail by Burrows and Kennaway (1934), while David, Freud, and de Jongh (1934), and Korenchevsky and Dennison (1934) have demonstrated an increase in weight of the prostate of the castrated rat as a result of œstrin injection.

Recently we have reported in abstract on changes produced by œstrone in the prostate of the rhesus monkey, *Macaca mulatta*, and the Guinea baboon, *Papio papio* (Parkes and Zuckerman, 1935). Almost simultaneously with this publication of our findings, which are described below in more detail, Courrier and Gros (1935) published a short account of similar observations on the Barbary ape, *Macaca inuus*.* Owing to the anatomical similarity of the monkey and human prostates, a valid comparison can be made of the response of the former to œstrone with the clinical condition of prostatic hypertrophy.

Table I.—*Control Monkeys*

No.	Autopsy weight (kg.).	Approx. age (years).	Utricular epithelium (layers).
MM 2	5·3	4-8/12	1–2
9	2·7	2-6/12	2
11	3·5	3-3/12	2
17	3·5	3-1/12	2
22	—	2-2/12	2–3
23	1·8	1-8/12	1–2
27	2·7	2-8/12	1–2

MATERIAL

A list of the monkeys used in the present study, together with relevant details, is given in Tables I. and II. Estimates of age are based on body-weight and dentition (Schultz, 1933). All the animals were immature. MM 13 and 22 were Guinea baboons, *Papio papio*, and the remainder were rhesus monkeys, *Macaca mulatta*.

Table II.—*Monkeys Receiving Œstrin*

No.	Weight at start of exper. (kg.).	Approx. age (years).	Days injected.	Total œstrone injected (mg.).	Utricular epithelium (layers).
MM 1	4·3	3-7/12	6	30·0	5–6
12	4·3	4	6	30·0	4–5
13	4·4	2-2/12	6	30·0	8–16
14	3·9	3	6	15·0	2–8
15	4·1	3-1/12	6	30·0	2–3
16	3·5	3-4/12	6	6·0	3–5
18	4·8	4	28	5·6	15–25
19	4·8	4	28	28·0	15–25
20	1·8	1-3/12	6	30·0	3–6
25	1·7	1-3/12	7	1·4	2–5
26	2·5	2-6/12	16	16·0	10–15

The animals were injected once daily, for periods varying between 6 and 28 days, with an oil solution of crystalline œstrone (ketohydroxyœstrin), for which we are indebted to the British Drug Houses Ltd. This

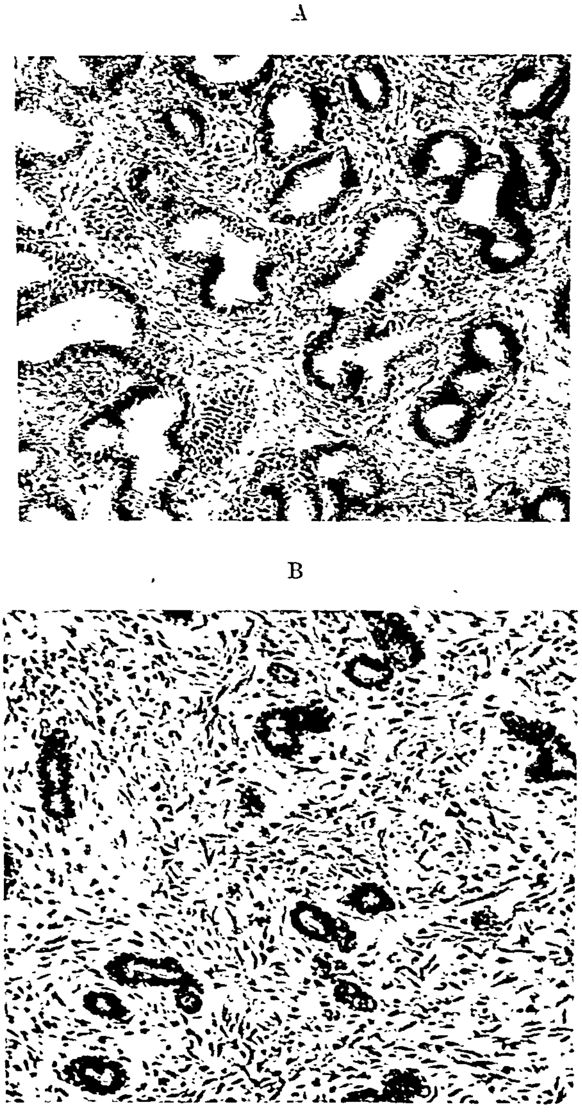

FIG. 1.—(A) Prostatic glands and stroma of normal rhesus monkey (MM 2, see Table I.). × 142. (B) Prostatic glands and stroma of rhesus monkey after injection of œstrone (MM 1, see Table II.). × 142.

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* We are informed, in a personal communication, that similar observations, as yet unpublished, have also been independently made in the United States by Dr. G. van Wagenen.

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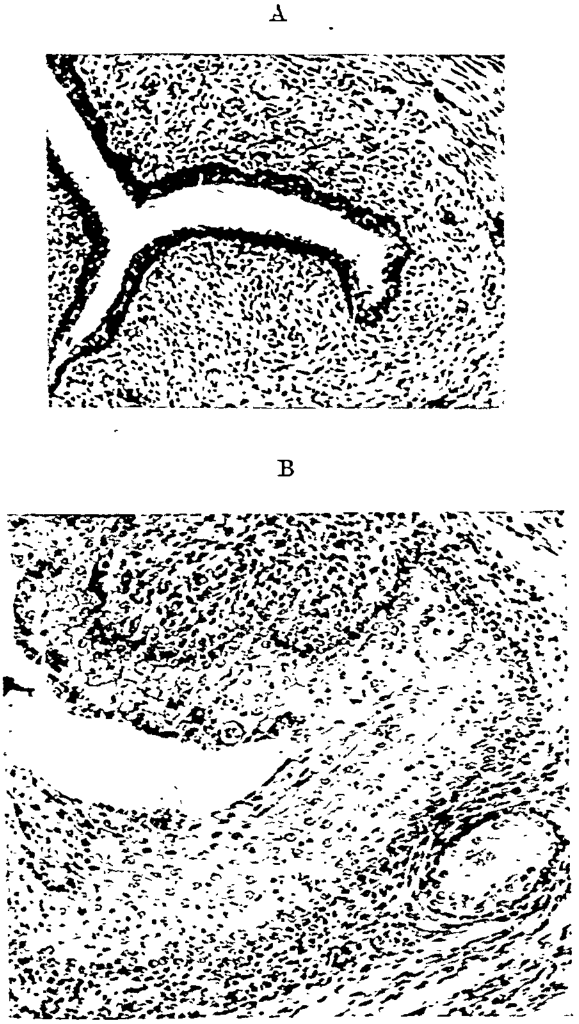

FIG. 3.—(A) Utricle of normal Guinea baboon (MM 22, see Table I.). × 142. (B) Utricle of Guinea baboon after injection of œstrone (MM 13, see Table II.). × 142.

urethra. Irregularities in the utricular epithelium of the rhesus monkey MM 15, suggest incipient "glandular" budding, yet the utricular response of this animal was the poorest in the experimental series. The sensitivity of the animals to œstrone appears to vary greatly, and larger doses do not seem to be necessarily more effective than smaller amounts. Different regions of the utricle also show different degrees of response.

Prostatic glands and stroma.—The prostatic glands are reduced in number in most of the experimental animals, the chief exceptions being the oldest members of the group, MM 18 and 19, in whom they are more or less normal as compared with a control animal of approximately the same age. The glands also tend to be narrower, and they are frequently seen in section as solid cords of cells. The manner in which their number is reduced is by no means clear. The glandular epithelium is generally healthy, and epithelial degeneration was observed in only one case. The narrow glandular lumen in the experimental animals is suggestive of increased stromal pressure, and it seems that the glandular involution may be more apparent than real.

DISCUSSION

The most striking effect of œstrin on the rhesus prostate is the utricular response, which is strictly comparable with the vaginal reaction to œstrin. Since the vagina and uterus masculinus may have a similar embryological origin (Meyer, 1909; Vilas, 1933), and since the utriculus of the rhesus monkey is certainly "vaginal" in appearance, this finding cannot be regarded as surprising. The occasional vestigial remains of a Müllerian duct in male fowls have also been shown to be responsive to œstrin (Juhn and Gustavson, 1932), and it has been argued that the epithelial response to œstrin of the dorsal lobes of the mouse and rat prostate indicates that these lobes, which are usually regarded as being coagulating glands, are also derivatives of the Müllerian ducts (Lacassagne, 1933; Burrows, 1934). Unfortunately embryological evidence on this point is lacking. It may be noted in this connexion that while there is no utriculus masculinus in the adult mouse, such an organ has been described as occurring in the new-born (Hütt, 1926).

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Coagulating glands, such as occur in the mouse and rat, are not represented in man and, therefore, in spite of the superficial similarity of the urogenital effects of œstrin in the male mouse to the clinical syndrome of enlarged prostate in man, the experimental condition in the rodent cannot be expected to shed direct light on the ætiology of the human disease. On the other hand, our findings on the monkey may have some bearing on this problem. A uterus masculinus is present in all men (Vintemberger, 1926), and the human male undoubtedly elaborates and excretes an œstrogenic substance. In the circumstances, it seems likely that the human prostatic utricle must be regarded as a potentially active organ.

Since the utricular response in the rhesus monkey and Guinea baboon is purely vaginal in character, it bears little resemblance to the glandular hypertrophy characteristic of prostatic enlargement in man. The glandular nature and general "uterine" appearance of the utricle in certain other primate species, including man, suggests, however, that in them it may include a uterine as well as a vaginal component, a possibility which can neither be established nor excluded on the available embryological evidence (see Zuckerman and Parkes, 1935). If the utricular glands, where present, are true homologues of uterine glands, their response to the unopposed action of œstrin should be cystic hyperplasia, such as takes place in the female primate in similar circumstances (Kaufmann, 1934; Zuckerman and Morse, 1935). If such a response occurred in the male, the histological appearance would be that of glandular hyperplasia of the prespermatic lobe of the prostate where, according to many investigators, prostatic enlargement may originate (see Marion, 1923). We are at present extending the experiments to species of monkeys in which the utricle is glandular.

Prostatic enlargement in man is essentially a disease of later life. This fact suggests that it may be associated with male hormone deficiency, and that male hormone therapy is indicated. Van Cappellen (1933) claims to have obtained good clinical results from such treatment, while according to David, Freud, and de Jongh, simultaneous administration of male treatment caused œdematous swelling of the external genitalia and surrounding regions (viz., anus, base of tail, lower part of back, posterior aspects of thighs). A detailed account of this external response of the male has recently been given by Bachman, Collip, and Selye (1935). The swelling never became large enough to cause retention of urine. Autopsies were performed one or two days after the last injection.

THE NORMAL MONKEY PROSTATE

The following description of the normal immature rhesus prostate, which in structure is essentially the same as the human, is based on a study of the control series.

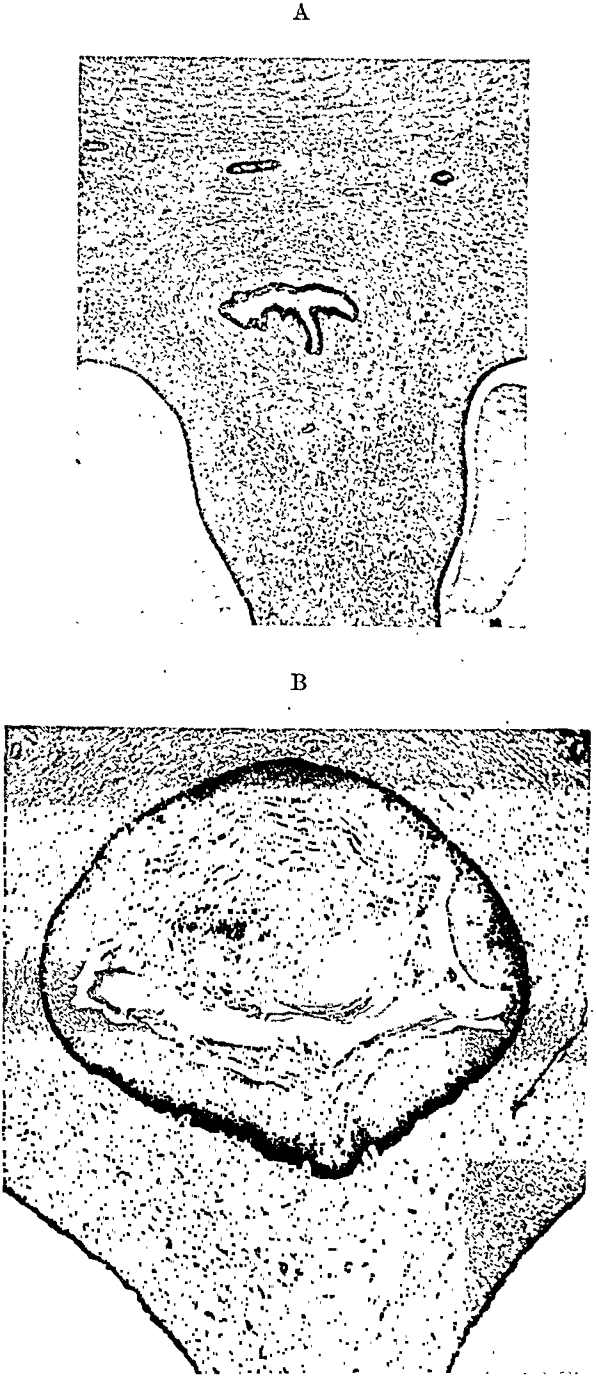

FIG. 2.—(A) Utricle of normal rhesus monkey (MM 11, see Table I.). × 29. (B) Utricle of rhesus monkey after injection of œstrone (MM 18, see Table II.). × 29.

The prostate is a compact glandular organ except in its cranial third, which is broken up into a series of separate lobules, some of which intervene between the muscular coat of the urethra, and the ducts of the seminal vesicles and vasa deferentia. The common ejaculatory ducts are formed about the middle of the cranial half of the prostate, and pass into the urethra on either side of the crista urethralis about the middle of the caudal half of the organ. The utriculus masculinus opens at about the same level. The utricle terminates cranially in the lobulated part of the prostate, and except at its extremities its transverse lumen projects dorsally in the midline in the form of a narrow slit. The prostatic glands do not completely encircle the urethra, as they do in man; the urethra transverses a groove on the ventral surface of the prostate.

The numerous prostatic glands are narrow, tubular, and branched, and lined by a single (occasionally double) layer of columnar cells with relatively large, basal nuclei. The basement membrane is generally well defined. The glands are more widely open, and the epithelium more regular and more obviously secretory, in the older than in the younger specimens. The collecting ducts generally have a double layer of epithelium. Those of the caudal glands ascend, and those of the cranial descend, to open into the urethra near the cranial part of the crista urethralis. They do not open into either the ejaculatory ducts or uterus masculinus, both of which are isolated from the rest of the prostate—and to some extent from each other—by fibromuscular tissue. The glands lie in a stroma of tightly packed collagenous fibres and plain muscle.

The epithelium of the ejaculatory ducts is composed of moderately tall columnar cells, frequently two layers thick, with relatively large nuclei filling the greater part of the cell bodies. In places, where the ducts are distended, the epithelium is much flattened.

The uterus masculinus is lined by low cuboidal epithelium, one to two layers deep in the rhesus monkeys, and two to three in the Guinea baboon. Its lumen is generally small and empty, especially in the dorsal projection, which may be represented by only a cord of epithelium. In specimens MM 2 and MM 9 the utricle contained a homogeneous eosinophil coagulum in which were embedded some cast-off epithelial cells and leucocytes. The stroma of the utricle is less fibrous than that of the rest of the prostate.

EXPERIMENTAL RESULTS

The significant prostatic changes in the experimental animals comprise (*a*) growth of the utricular epithelium and (*b*) reduction in the size and number of the prostatic glands, with a corresponding increase in the amount of collagenous fibrous tissue. Unlike Courrier and Gros (1935), we were unable to detect with certainty any gross enlargement of the prostate as a whole.

Uterus masculinus.—In the animals injected for 6 days the utricle has responded very rapidly to œstrone, the number of layers of epithelium increasing to as many as five times the normal. Mitoses are numerous. The growth is irregular, and the superficial cells are soon shed. Epithelial growth becomes more pronounced as the injections continue, and the basal cells become highly chromophilic like the corresponding cells of the normal vagina. In MM 18 and MM 19 the epithelium is in places as many as 25 layers deep, the more superficial layers being cornified. The lumen of the utricle is distended, appearing circular in cross-section, and is filled with epithelial debris and leucocytes, which can be seen passing through the epithelium from the stroma. The process of distension effaces the normal T-shape of the lumen. The cells surrounding the utriculus appear more numerous and better defined in some of the injected than in the normal monkeys, and there is a suggestion of increased vascularity.

There is a single utricular "gland" in the Guinea baboon, MM 13, but in the absence of adequate control material for this species, it cannot be regarded as an effect of the injections. A presumably specific character exhibited by the Guinea baboon is a very widely dilated prostatic

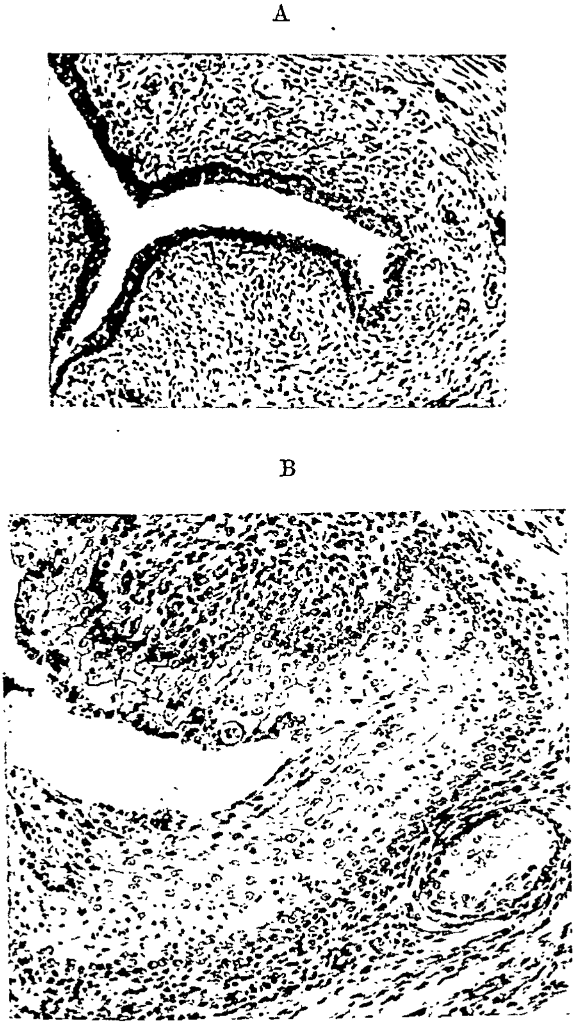

FIG. 3.—(A) Utricle of normal Guinea baboon (MM 22, see Table I.). × 142. (B) Utricle of Guinea baboon after injection of œstrone (MM 13, see Table II.). × 142.

urethra. Irregularities in the utricular epithelium of the rhesus monkey MM 15, suggest incipient "glandular" budding, yet the utricular response of this animal was the poorest in the experimental series. The sensitivity of the animals to œstrone appears to vary greatly, and larger doses do not seem to be necessarily more effective than smaller amounts. Different regions of the utricle also show different degrees of response.

Prostatic glands and stroma.—The prostatic glands are reduced in number in most of the experimental animals, the chief exceptions being the oldest members of the group, MM 18 and 19, in whom they are more or less normal as compared with a control animal of approximately the same age. The glands also tend to be narrower, and they are frequently seen in section as solid cords of cells. The manner in which their number is reduced is by no means clear. The glandular epithelium is generally healthy, and epithelial degeneration was observed in only one case. The narrow glandular lumen in the experimental animals is suggestive of increased stromal pressure, and it seems that the glandular involution may be more apparent than real.

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SUMMARY

Ten immature male rhesus monkeys, varying in weight from 1·7 to 4·8 kg., and one immature Guinea baboon, were injected daily, for periods of 6 to 28 days, with an oil solution of œstrone. The total amount injected varied between 1·4 mg. and 30·0 mg. Six normal rhesus monkeys and one Guinea baboon of equivalent weights were used as controls.

The injected series showed pronounced prostatic changes, comprising (*a*) diminution in the number of true prostatic glands, with a corresponding increase in the amount of fibromuscular stroma; and (*b*) epithelial growth in the uterus masculinus. The latter change is very conspicuous, and the utricle acquires a large distended lumen lined by as many as 25 layers of stratified epithelium. The significance of these results to the problem of pathological prostatic enlargement in man is discussed.

The cost of most of the animals was defrayed from a grant to S. Z. from the Medical Research Council.

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PUTNEY HOSPITAL.—Prince Arthur of Connaught presided over the annual meeting of Putney Hospital where extensions are to be opened on April 30th by Princess Arthur. Ten new paying wards have been built, the out-patient department has been reconstructed, and a new mortuary and chapel have been given. Offices for the matron and the almoner, a new massage department, a casualty ward, and a suite of rooms for the resident medical officer have also been added.

EMBOLISM OF THE CORONARY ARTERIES

By A. S. Hoseason, M.D., M.R.C.P. Lond.

Coronary embolism is extremely uncommon; the probabilities are so strongly against an embolus of suitable size being swept by the violent aortic stream into a coronary artery that it is remarkable that it should occur at all. The following is an account of a case with references to the scanty literature.

CASE REPORT

The patient, a well-built and muscular male of 36, was brought into hospital one morning at 8.30, having collapsed in the street at 8.15. He said that while proceeding to work and feeling perfectly well he had suddenly been seized with the most intense pain in the chest and across the shoulders. He vomited and collapsed.

Previous history.—About a year before he had been in hospital with cellulitis at the back of the neck, and a little while later with lymphadenitis in that area. He had had no malaise or dyspepsia or definite illness lately; he had in fact been in good health. There was no history of acute rheumatic fever.

Physical examination.—The patient was obviously in considerable pain, but apart from this was not dyspnœic, nor was he cyanosed; there was no smell on the breath. The temperature was 97° F. The only abnormal physical signs were a slow pulse, rate 60, but regular in rhythm and of moderate tension; the area of cardiac dullness extended outwards to the left to the nipple line, and there was a localised systolic murmur in the aortic area. The cardiac impulse was about normal in force, and there were no thrills. There was no abdominal tenderness or rigidity, and examination of the chest and central nervous system was negative. As is said, there were no abnormal signs beyond those described above.

Diagnosis.—It will be seen that tentative theories as to perforation of a peptic ulcer, spontaneous pneumothorax, a tabetic crisis (and even Nothnagel's syndrome) were not supported by the findings. Occlusion of the right coronary artery was suggested, more fancifully than seriously, on the evidence of the pain, the slow pulse, and the lack of any other likely diagnosis.

The patient continued in much the same state up to 9.55 A.M., when he suddenly became blue and died.

Post-mortem.—External appearances were normal except for marked general cyanosis. *Lungs and pleural cavity:* normal. *Pericardial sac:* no excess of pericardial fluid. *Heart:* milk-spots on epicardium. Weight, 14 oz. Left ventricle considerably enlarged (concentric hypertrophy). Right auricle and ventricle and great veins distended with dark, unclotted blood. The myocardium appeared healthy. The aortic valves were sclerosed and partly calcified. The other valves were normal. On the right (posterior) aortic cusp was a small thrombus loosely attached to an ulcerated area over a calcified nodule. Half an inch along the right coronary artery was a small soft clot, about $\frac{1}{3}$ in. long and $\frac{1}{6}$ in. thick—presumably a vegetation derived from the ulcerated valve cusp. *Liver and kidneys:* intensely congested; bladder empty. Pancreas and spleen congested. *Stomach:* mucosa very congested; a small quantity of partly digested food. *Brain:* excess cerebrospinal fluid and slight dilatation of the ventricles.

An interesting contrast was provided by the normality of lungs and the congestion of the other viscera. The explanation lies in the situation of the embolus producing, so to say, an acute "half heart" failure. The distribution of the right coronary artery includes the right auricle, most of the right ventricle, and the posterior part of the interauricular and interventricular septa, where the auriculo-ventricular node is situated, and the bundle of His runs (Walmsley,[1] Gross [2]). The junctional tissues are but poorly vascularised at the best of times, and it has been said

(Gross) that the myocardium of an elderly person is better prepared for coronary occlusion than that of a young man. A sudden failure of the right side of the heart would affect and produce congestion only in the venous circulation and therefore in viscera other than the lungs.

Judging by the sequence of events the obstruction must at first have been incomplete, the embolus probably lying across the mouth of the coronary artery, until at 9.55 A.M. it was forced into the lumen of the artery and the obstruction became complete. The slow pulse was caused by defective conduction in the junctional tissues, probably a 2 : 1 block. An idioventricular rhythm is possible at the high rate of 60, but this is not likely as the man had not fainted (from cerebral anæmia during the pause before his ventricles "took over").

LITERATURE OF THE SUBJECT

The literature of the subject makes interesting reading. O. Saphir[3] collected and analysed the cases known up to 1924, 11 in all, and also gave the details of 3 cases of his own. It appears that Virchow, in 1856, first described coronary embolism in an autopsy on a case of recent endocarditis in a young woman. She had an universal systemic embolism, with several small emboli in her myocardium which, however, were not of any great importance in her general clinical condition. Discussing autopsy reports, Saphir emphasises the point that cases described without evidence of the origin of the embolus should be considered not proven.

After 1924 cases are recorded more frequently.

Jacobi, Kenler, and Silverman[4] had a notable case of paradoxical embolism, in which the patient died 15 minutes after the onset of pain in the chest. An autopsy was performed two hours later, and the following is an extract from their report: "On opening the thoracic cavity, several complete auricular contractions were observed, tapering off into fibrillary twitchings of the left ventricle, while the lungs rapidly deepened in red color and the abdominal veins and pulmonary artery became visibly distended with venous blood." The embolus was found in the left coronary artery, and was derived from a femoral thrombus, having gone through a patent foramen ovale. There was also an infarct in the left kidney, and the lungs, although congested, were not œdematous. It is quite remarkable that the heart of a person (presumably) dead two hours should yet be able to generate beats of a sort. It is of considerable importance to note that a left-sided embolus, causing a failure mainly left ventricular until the heart as a whole became disorganised, should be seen to produce congestion in the lungs, this being in contrast to my case in which the failure was right-sided.

Chevalier Jackson and Babcock[5] reported coronary air embolism during a thoracic operation. The patient died very quickly, and when the heart was looked at bubbles of air were seen in the superficial coronary vessels. They suggest, as a counsel of perfection, that when air embolism occurs, the air should be aspirated with a hypodermic needle and syringe.

The artery most commonly blocked is the anterior descending branch of the left coronary. The embolus is usually a vegetation derived from an ulcerated valve. It is for this reason, as compared with coronary thrombosis, that the victims are relatively young. Death occurs fairly soon after the embolism and is often associated with irregularities in the heart-beat, though in some cases the end is delayed for a few hours.

Experimentally (Rukstinat[6]) it was found that dogs with coronary air embolism died promptly, with ventricular fibrillation. If death did not immediately occur, then the air was absorbed and the dogs recovered. Death was less likely to occur if the air was prevented from reaching the brain by ligating the carotids. In other experiments F. M. Smith[7–9] found that if both main branches of the left coronary were tied, death resulted instantly from ventricular fibrillation. When only one of the main branches was tied serious results did not invariably occur, while if the right coronary was ligated about half the dogs survived for shorter or longer periods. During these experiments he took electrocardiograms and obtained the characteristic Pardee curves. Kaufmann reports absence of demonstrable change in the myocardium even seven hours after the ligature.

The *diagnosis* of the condition is obviously much the same as in coronary thrombosis, except that the syndrome is more frequent in young adults and so is not likely to be thought of. Its possibility should always be borne in mind in cases of ulcerative endocarditis and femoral thrombosis; in the latter condition it should form part of the differential diagnosis from pulmonary embolism. The presence of an irregular or slow heart action is of importance. A further stage in the diagnosis is attempting to locate the embolus. In connexion with coronary occlusion in general, Hamman,[10] in a very comprehensive essay on its symptomatology, gives the opinion that it is impossible to locate the site of the occlusion, that is, without the aid of the electrocardiograph. He points out the great variation in symptoms that follow apparently similar accidents. "To mark the extremes it is sufficient to note that the same accident may in one instance be followed, or rather accompanied, by instant death, whereas in another it may pass unnoticed and only later be accidentally discovered." Also, that since occlusion of a coronary artery may cause mural thrombi in either ventricle, one cannot say, for example, that a pulmonary embolus, coming from the right ventricle, is necessarily caused by a right coronary lesion. There is in addition the possibility of paradoxical embolism.

I should like, however, to make the following observations. The majority of coronary occlusions affect the descending interventricular branch of the left coronary artery—that is, mainly the left ventricle —and so the recognised symptomatology is that of an acute left heart failure syndrome. But if the blood pressure is not much affected and the lungs show no evidence of passive congestion, then one might reasonably deduce that the right, not the left, coronary was blocked. This would be supported by the appearance of venous congestion and also by any evidence of heart-block. In the case I have described, it was the slow and regular pulse that suggested the diagnosis, and it will be remembered that at the post-mortem there was no sign of congestion of the lungs, while in the case of Jacobi, Kenler, and Silverman, a left-sided embolism, the lungs were actually observed to deepen in red colour. In search of support for this suggestion, that main bundle block is likely to occur with right coronary lesions, I examined the electrocardiograms reproduced by F. M. Smith. Unfortunately he did not seem to have investigated the subject of main bundle block, being concerned chiefly with variations in the Q R S complex and T-wave. Also, none of the electrocardiograms were of right coronary lesions, but it is an important point that in the many left-sided lesions shown there was no evidence of main bundle block. There was only one electrocardiogram which was at all helpful; this was of a man (case 3, paper 3[9]) with a very characteristic right bundle branch block; in whom a thrombosis was found at autopsy. Which artery was affected was not specified, but the evidence favours the right. The picture showed a very prolonged P–R interval. There must be many electrocardiograms of experimental ligature of the right coronary which have not been reproduced because they were not thought to be of sufficient interest. I feel that it would in fact be of considerable interest to have this point cleared up.

There still remains the problem as to why coronary embolism is so rare relative to embolism elsewhere, in spite of the fact that the coronary blood flow is high in comparison to that of other organs. Thus it has been estimated that during exercise the minute flow is as much as 1·4 litres (Samson Wright).[11] At rest the minute volume is approximately 0·2 litre—that is, about a twentieth part of the total minute circulation volume, and yet systemic embolism is disproportionately more common. An important factor, no doubt, is that the rush of aortic blood sweeps any loose fragment well past the coronary openings which will be more or less masked by the aortic valve cusps. Also, the coronary circulation is unique in that it fills during diastole. A clot which has been dislodged probably some time during systole will have passed well out of the way by the time the coronaries commence their diastolic filling from the residue of blood in the aorta.

I wish to thank Dr. H. O. West, medical superintendent of St. Giles' Hospital, for his permission to publish the above case.

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CULLEN'S SIGN
IN RUPTURED ECTOPIC GESTATION

WITH A REPORT OF TWO CASES

By IRWIN SMITH, M.D. Toronto
AND
FREDK. J. WRIGHT, B.Chir. Camb., M.R.C.P. Lond
HOUSE SURGEONS, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL

IN 1919 T. S. Cullen, of Baltimore, described the occurrence of a discoloration, resembling a bruise, at the umbilicus of a patient with a ruptured ectopic gestation. The patient, a thin woman of 38, gave a history of three weeks' lower abdominal pain. There had been no menstrual abnormality. One week after the onset of the pain the umbilicus had suddenly become bluish-black, but when seen by Cullen the discoloration resembled a fading bruise. There was no umbilical hernia. Having previously read Ransohoff's description (1906) of localised jaundice of the umbilicus, in a patient with a ruptured common bile-duct, Cullen made a correct pre-operative diagnosis of a ruptured ectopic gestation.

We have recently observed two cases, each of which showed a similar discoloration in association with a ruptured ectopic gestation. In the earlier case the discoloration was at the site of an appendicectomy scar, but in the later case, which occurred whilst this paper was in preparation, the discoloration was at the umbilicus.

THE FIRST CASE

Mrs. A. B., aged 47, housewife, was admitted to hospital on Sept. 23rd, 1934, with lower abdominal pain. Twenty-three years ago—first child, normal pregnancy. Twenty years ago—three months' abortion, in bed two weeks with fever. No operation. Informed by doctor that further pregnancies were unlikely. Five years ago—appendicitis. Battle's incision, appendicectomy with drainage. No further pregnancies. General health good. Menstruation regular, 3 : 28, accompanied by slight pain in the left iliac fossa.

Four weeks before admission menstruation occurred at expected time but bleeding was unusually profuse and accompanied by severe pain in the hypogastrium and right iliac fossa. Vaginal hæmorrhage continued every day for three weeks, varying in amount and accompanied intermittently by pain. Bleeding ceased and no pain occurred for three days. The patient did not remain in bed. Five days before admission the patient "did some washing" and the pain became severe and frequent in both iliac fossæ. During the next night the patient had a sudden severe pain, and on the following morning was very surprised to notice a "bruise" in the appendicectomy scar. The presence of the "bruise" led to her consulting a doctor. No further vaginal hæmorrhage occurred. The pain was less until the day of admission, when it began to increase and also to occur in the sacral region. The "bruise" had begun as a blue discoloration. The patient is confident that there had been no injury and she had never had a spontaneous bruise before.

On examination the patient was comfortable and gave the above history clearly. Temp., 99° F.; pulse, 108; resp., 20. The cheeks were red but the lips slightly pallid. There was a discoloration on the abdomen extending from the lower third of the Battle's incision for a distance of 3 cm., beginning as a blue spot above, continued as a thin yellow line and widening to an elliptical area 5×3 cm., blue in the centre, changing to yellow at the margins. The lower third of the incision had been the site of a drainage-tube but no hernia was evident then or subsequently. After catheterisation there was still a palpable swelling to the left of the hypogastrium and general tenderness of moderate severity over the lower abdomen. On vaginal examination the swelling could be palpated bimanually. The body of the uterus was not palpable. The cervix was tender and fixed in an intermediate position. There was no blood in the vagina.

Diagnosis.—Largely on the basis of Cullen's sign a diagnosis of a ruptured ectopic gestation was made, although the exact distribution of the shades of colour was difficult to explain.

Operation.—The abdomen was opened through a lower midline incision. On opening the peritoneum there was no free fluid blood, but a considerable quantity of blood clot was found in the pelvis and surrounding an enlarged left Fallopian tube. The right tube and ovary appeared normal and no direct communication could be demonstrated between the appendicectomy scar and the pelvic viscera or blood clot. The left tube and ovary were removed and recovery was uneventful. The pathologist was unable to find definite histological evidence of a gestation but the tube had evidently been the site of an early pregnancy. The discoloration faded in two weeks. The bleeding and coagulation times, and the platelet count, determined subsequently, were normal.

THE SECOND CASE

Mrs. C. D., aged 40, housewife, was admitted to hospital on Dec. 5th, 1934, with lower abdominal pain. Four pregnancies 16, 15, 12, and 4 years ago. Last normal period nine weeks before admission. Three weeks before admission—i.e., two weeks after expected time—vaginal hæmorrhage recurred. Since then there had been intermittent vaginal hæmorrhage accompanied by an ache in the lower abdomen. For the last two weeks the patient remained in bed with general malaise and weakness and without relief of pain. She noticed that she was becoming paler. There was no urinary disturbance. On the evening before admission at 11 P.M. she had a sudden onset of lower abdominal pain, chiefly on the left side, accompanied by prostration and nausea. She vomited once. The pain resembled labour pains. There was a slight increase of vaginal hæmorrhage. The patient observed that she had suddenly become much paler. On the day of admission she felt very faint. She had a constant generalised ache in the lower abdomen associated with tenderness, but no further severe pain occurred.

On examination.—Temp., 99·6°; pulse, 136; resp., 22. There was general moderately severe pallor. The tongue was moist and clean. The lower abdomen was full but moved freely and evenly on respiration. Diffuse abdominal tenderness was present, most marked in the left lower quadrant. No tumour mass could be palpated. There was shifting dullness to percussion in the flanks. Vaginal examination revealed a fullness in the pouch of Douglas and a resistance in the left fornix. The body of the uterus was not palpable. In the ward, on careful inspection of the umbilicus, a definite faint discoloration resembling a bruise was seen, starting in the umbilicus and spreading for about 3 cm. around. This discoloration closely resembled the coloured illustration given by Cullen, but would probably not have been recognised in the ward by those ignorant of the sign. In the strong light of the operating theatre the discoloration was very definite and could scarcely have escaped notice, but care had been taken to use biniodide in spirit, instead of iodine, in preparing the skin.

Operation.—The abdomen was opened through a left lower paramedian incision. On opening the peritoneum, blood clot and abundant free blood was found. The blood did not seem to have been in direct contact with the peritoneum at the level of the umbilicus. A left-sided ruptured tubal gestation was found with a six weeks embryo in its amniotic sac. The left tube and ovary were removed. The patient was given an autotransfusion of nearly two pints of citrated blood and normal saline was poured into the abdomen. The patient did well for four days but then developed severe paralytic ileus with frequent vomiting. She responded well to gastric lavage, continuous drainage through a Ryle's tube, and to injections of acetylcholine. On the tenth day she had a temporary set-back, associated with an allergic skin eruption, but subsequent recovery was uneventful and complete. The discoloration faded in about two weeks. The patient was discharged on Dec. 29th.

REVIEW OF THE LITERATURE

This sign was apparently first recorded by Hofstätter (1909) but a correct pre-operative diagnosis was not made. It is sometimes referred to as the Hofstätter-Cullen-Hellendall sign, but it was Cullen (1919) who first presented the clinical picture. In some of the recorded cases free blood was seen shining through a thin umbilicus or through the coverings of an umbilical hernia. An example of this type was seen by one of us (I. S.) in a patient with a ruptured liver and spleen. Souligoux and Laquière (1922) recorded a similar observation, the blood in this case being seen through the coverings of a femoral hernia. A diagnosis of strangulation was made as the patient had vomited and had not passed flatus, but exploration revealed a ruptured ectopic gestation with free blood. It would, we think, be convenient to reserve the term "Cullen's sign" for the type of case where the discoloration occurs in and around the tissues of the umbilicus or of an incisional scar.

The following is a summary of reported cases as far as we have been able to discover them:—

Cullen (1918, 1919): Case described above.

Hofstätter (1909) Case 1: Lactating woman. Blue discoloration of umbilicus. Pre-operative diagnosis of strangulated umbilical hernia. Laparotomy revealed a ruptured ectopic gestation. Omentum adherent to hernia. (1922) Case 2: Ventral hernia. Permanganate colour of hernia from a ruptured ectopic gestation. (1923) Case 3: Umbilical hernia. Blue discoloration from a ruptured ectopic gestation. Cases 2 and 3 were published in 1927.

Schmid (1923) described a case that occurred in 1913. Classical signs of a ruptured ectopic gestation. A blue colour was seen shining through an umbilical hernia. Laparotomy confirmed the diagnosis.

Hanak (1920) reported a case of intestinal obstruction occurring in 1919 in a patient who in 1915 had had a right ruptured ectopic gestation associated with a blue discoloration of an incisional hernia. The patient had been operated on for a ruptured ectopic gestation on the same side within a year previously. A pre-operative diagnosis of a strangulated hernia was made, although the correct diagnosis was entertained.

Hellendall (1921). Presenting symptom was a blue-green discoloration of a small empty umbilical hernia. Appearance resembled peritoneum covering free blood. The pre-operative diagnosis was a ruptured ectopic gestation. Laparotomy showed a left unruptured tubal pregnancy with free blood in the peritoneal cavity. This observation was at first thought to have been unique.

Novak (1922) Case 1: Classical history of ruptured ectopic gestation. Around the umbilicus there was an areola of greenish-yellow discoloration. Laparotomy confirmed the diagnosis. Case 2: Classical history and signs of ruptured ectopic gestation. A greenish-blue pigmentation was present around the umbilicus. Laparotomy confirmed the diagnosis.

Jackson (1922): Ruptured ectopic gestation with free blood in the peritoneal cavity in an obese woman. Cullen's sign was visible only by illumination of the umbilicus in a dark room. The diagnosis was made before a vaginal examination or the laparotomy.

Souligoux and Laquière (1922): Details given above.

Strübe (1923): Blue coloration at the umbilicus 17 days before signs of a tubal abortion. By this time, when laparotomy showed free intraperitoneal blood, the discoloration at the umbilicus had disappeared.

Pfeiffer (1923): A blue discoloration occurred at the umbilicus seven weeks before laparotomy revealed a pelvic hæmatocele from a ruptured tubal gestation without free fluid blood.

Gold (1926): Dark blue swelling at the upper end of a midline laparotomy scar. An associated irreducible umbilical hernia contained omentum. History of an injury to the abdomen from a stick two weeks before, in addition to a typical history and signs of a ruptured ectopic gestation. Laparotomy confirmed the diagnosis.

Solowjew (1928): Observed Cullen's sign on one occasion only in over 100 cases of ruptured ectopic gestation. In his case the diagnosis was in doubt until three days after admission when a greenish discoloration appeared about the umbilicus, suprapubically and in the region of the superior anterior iliac spines. He gives an excellent coloured illustration.

Forgue (1929): Typical Cullen's sign. Ruptured ectopic gestation. Omentum adherent to umbilicus.

Lavell (1929): Cullen's sign observed twice in two successive ectopic gestations in one patient. He mentioned that the sign occurred rarely in a series of 410 cases of ruptured ectopic gestation.

Behney (1930): Cullen's sign present in only one of a series of 167 consecutive cases of ruptured ectopic gestation.

Tanner (1932) described a case where three days after the abrupt onset of severe lower abdominal pain a discoloration began at the umbilicus and spread to the lower abdomen. The bruising was attributed by a doctor to an injury, but there was no history of this. Ten days later laparotomy confirmed the diagnosis of a ruptured ectopic gestation, with free intraperitoneal blood.

Schmitz (1932): Diagnosis of ruptured ectopic gestation aided by appearance of a large blood-red colour change in and around an old appendix scar. No history of trauma. Omentum adherent to scar.

Esau (1934): A blue-coloured small umbilical hernia associated with typical skin pigmentation. Laparotomy revealed an ovarian pregnancy and adherent omentum in the umbilical hernia. Upon releasing the omentum the blue colour of the umbilicus disappeared but the pigmentary changes in the skin persisted.

Stabler (1934): Presenting symptom was a discoloration of the abdominal wall, consisting of a very dark mark one inch below the umbilicus, a separate "bruise" between the umbilicus and pubis, and a third area in the inguinal fold. The correct pre-operative diagnosis was made. Free blood was present in the peritoneal cavity from a left unruptured tubal gestation.

DISCUSSION

The occurrence of Cullen's sign in association with intraperitoneal hæmorrhage is clearly not fortuitous, but its explanation is obscure. Many theories have been propounded to explain the phenomenon. Hofstätter suggests that the colour change in a hernia a few hours after rupture of the gestation is due to free blood seen shining through the thinned-out abdominal wall. This observation is substantiated by Souligoux and Laquière (1922), Schmid (1923), and Hellendall (1921). Where a physiological or pathological weakening of the abdominal wall is present, especially when associated with adherent omentum or bowel, blood may track to this point and become trapped, thus giving rise to the discoloration. Esau (1934), among others, supplies corroborative evidence. Hofstätter considers the possible rôle played by lymphatic channels in the transportation of blood or its derivatives to the umbilicus, especially where the omentum is adherent to the abdominal wall. Strübe (1923) is of the opinion that in some cases dilatation and congestion of the umbilical veins from anastomosis with those of the broad ligament may explain the occurrence of Cullen's sign. Forgue (1929) favours the tracking of blood along omental adhesions as the likely cause. In view of its infrequent occurrence, Stabler (1934) suggests that an abnormal break of continuity of the peritoneum may be a necessary factor.

The lymphatic mode of development is, however, usually the most probable explanation. On this hypothesis the appearance of Cullen's sign may be compared with the occurrence of nodules of carcinoma spreading to the umbilicus from peritoneal carcinomatosis. The changing shades of colour might be explained as due to oxidation of absorbed blood pigments travelling in lymphatics connecting the umbilicus with the peritoneal cavity or in abnormal lymphatic channels at the site of previous incisions.

Cullen's sign is peculiarly rare. Hofstätter saw only three cases between 1909 and 1927. Stein (1925) in a series of 106 cases and Jonas (1933) in a series of 90 did not have a single example. Its rarity has been mentioned by Behney (1930) and Lavell (1929) (see above). There is usually a history of over two weeks' lower abdominal pain and sometimes of an acute exacerbation of the pain, followed by the sudden appearance of the discoloration which fades slowly. Although this is a common history in any case of ruptured ectopic gestation, it perhaps suggests that repeated small intraperitoneal hæmorrhages, rather than a single severe hæmorrhage, favour the appearance of Cullen's sign.

A blue discoloration of the umbilicus is not, however, pathognomonic of intraperitoneal hæmorrhage. zum Busch (1922) records an example caused by a hæmorrhage into an adherent ovarian cyst and Gold (1926) an example in the skin over an umbilical hernia containing strangulated omentum. Hellendall (1934) records an example in a case of doubtful origin, but possibly associated with cirrhosis of the liver and portal obstruction. None of these cases simulated a ruptured ectopic gestation, but Schumann (1923) recorded a case where, on the basis of a typical Cullen's sign, he erroneously made a diagnosis of a ruptured ectopic gestation. Laparotomy revealed a two months' intra-uterine pregnancy and bilateral acute salpingitis. Pus was oozing from very congested tubes, but there was no free intraperitoneal blood. No explanation was found for the typical umbilical ecchymosis.

Cullen's sign has also been recorded in cases of hæmoperitoneum not due to a ruptured ectopic gestation by Sternberg (1922) and Kapsinow (1925). Sternberg (1922) described a case where a hæmorrhagic ascites due to an adenocarcinoma of the liver was associated with a blue discoloration of the umbilicus. Kapsinow (1926) recorded the case of a child in whom a hæmorrhagic ascites, due to deposits in the peritoneal cavity, secondary to sarcoma of the kidney, was associated with a blue discoloration of the umbilicus. Stutzer observed a brown-blue discoloration of the abdominal wall about the umbilicus and in the right lower abdominal quadrant, three days after the onset of an acute hæmorrhagic pancreatitis. Petrivalsky (1931) records similar findings in three cases of acute hæmorrhagic pancreatitis.

We conclude, therefore, that Cullen's sign is a rare indication of intraperitoneal hæmorrhage; that it is not without fallacies, but that it may occasionally be an aid to diagnosis and sometimes even the presenting symptom.

We are indebted to Mr. H. J. Nightingale and to Mr. S. B. Chambers, honorary surgeons to the hospital, for permission to publish the above cases.

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Clinical and Laboratory Notes

PREVENTIVE IMMUNISATION OF SCARLET FEVER

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DURING the year 1933 there was a sharp epidemic of scarlet fever among the Bolton school-children which was specially noticeable from about May to December, the peak period being the month of October of that year. For the most part the fever was of the mild type, but in three elementary schools the number of cases was increasing, and it was decided to offer the parents protection for the children attending them.

The protection took the form of three fortnightly intramuscular injections of scarlet fever prophylactic toxin (Burroughs Wellcome and Co). The initial dose chosen was 500 skin test doses, the second 5000, and the third 20,000. The accompanying Table, which has been corrected to December, 1934, shows the number of children in each department of the three schools who were immunised. Since the completion of immunisation in each school. 150 cases of scarlet fever have been notified among the non-immunised group. The majority of the cases were treated in hospital and the diagnosis confirmed. One only has been notified among the completely immunised group. The remaining four cases which occurred among the immunised group received one or two injections only, and therefore were not completely immunised.

1 School.	2 Date of third inoculation in 1933.	3 Dept.	4 Children immunised.	5 Cases of Sc. F. in immunised up to Dec., 1934.	6 Children not immunised.	7 Cases of Sc. F. in children not immunised.
A.	June 29	Infant.	50	1*	140	8
		Sen. & M.	68	—	208	12
B.	Sept. 27	Infant.	27	—	198	34
		Sen. & M.	50	—	155	11
C.	Nov. 23	Infant.	117	1†	309	51
		Sen. & M.	226	2* 1‡	498	34
Total	..	..	538	5	1508	150

Sen. & M. = Senior and Mixed; * Had two injections only; † Had one injection only; ‡ Received three injections.

The four children in column 5 who had scarlet fever after one or two injections are excluded from the total in column 4 and included in the total in column 6.

There were very few reactions after the initial and final injections. Reactions were noted more after the intermediate dose of 5000 skin test doses, but these were for the most part slight. The Dick test was not carried out.

I am indebted to Dr. R. M. Galloway, medical officer of health for Bolton, for his permission to publish this note.

A CASE OF TUBERCULOUS MENINGITIS WITH RECOVERY

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Recovery from a proven tuberculous meningitis is so rare as to merit record.

A man, aged 24, was admitted to the Radcliffe Infirmary, from Dr. Tighe, of Eynsham, on July 11th. 1934. He was a solderer at the Pressed Steel Works, Cowley. Family history: Nil ad rem. Past history: Childish ailments only. Radical cure of hernia 1933.

Present illness.—For six weeks before admission he had experienced general joint pains, which had affected various joints, but mainly the right ankle and knee, and these had caused considerable loss of sleep. For two weeks he had noticed gradually increasing stiffness in his neck and shoulders, and steadily mounting headache, with deafness and tinnitus in the left ear. For one week he had been feeling seriously ill, had been constipated and vomiting at irregular intervals.

Condition on admission (July 11th).—Pulse-rate, 68; respiration, 20; temp., 99·2° F. Alert, good witness; looks ill. Tongue furred; colon loaded with scybala; heart and lungs normal. Marked neck rigidity without opisthotonus. Pupils react normally to light and accommodation. Discs normal. Slight nystagmoid movements of eyes to the right. Definite impairment of hearing in left ear. Cold calorie test also showed marked reduction in time and amplitude; no detailed measurements made. Tendon reflexes all normal and abdominal reflexes present. Kernig's sign present. Plantar response: right, flexor; left, *indefinite. On the following day the plantar was* definitely extensor. The following were the findings in the cerebro-spinal fluid:—

Date in 1934.	Organisms.	Globulin.	Cells.	Chlorides.
July 11	1 *B. tuberc.*	+ + +	Poly. Endos. Lymph.	620
,, 13	+ T.B.	+ + +	—	550
,, 26	0	—	Lymph. Endos.	620
,, 30	+ T.B.	—	Poly. Lymph.	630
Aug. 12	0	+ + +	—	680
,, 14	0	—	—	—
,, 31	0	+ + +	Poly.	690
1935. March 20	0	Trace.	None.	800

Radiography of the skull and sinuses revealed no abnormality.

Progress of illness.—During July and August he continued to be gravely ill, suffering from severe headaches at frequent intervals, relieved by lumbar puncture and morphia and recurrent vomiting, worse in the morning. His morale was excellent, in spite of his suffering, and his mind remained clear while his physical condition steadily deteriorated.

Sept. 12th: general condition very poor; emaciation extreme, but still bright and intelligent: still suffering from intermittent headaches and vomiting daily. Neck rigidity less marked. Slight weakness of L. VII. Marked impairment of hearing L. VIII. Left plantar response extensor. These signs suggest a tuberculoma in the posterior fossa involving the L. VII, VIII nerves and associated with a tuberculous meningitis. He was moved on to the balcony, and from this time on began to improve, his headaches diminished, he rarely vomited, and his appetite improved. The progress of his weight was:—

Sept. 28th, 1934	6 st. 13 lb.
Oct. 7th, ,,	7 st. 6½ lb.
,, 12th, ,,	7 st. 11 lb.
March 12th, 1935	9 st.

On Oct. 5th Mr. R. G. Macbeth examined the ears and reported as follows:—

	Right ear.	Left ear.
Watch	3 in.	¼ in.
Swabach	4 secs.	2 secs.
Cold calorie test	45 secs.	67 secs. before onset.

Membranæ tympani normal.

On Oct. 17th the general condition was much improved; there was occasional slight headache; no abnormality was detected in the central nervous system other than impaired hearing in the left ear. On the 20th he was discharged from hospital and sent to convalesce at the seaside. On March 6th, 1935, he was readmitted for investigation and re-examination. Feels and looks well; weight, 9 st.: complaining of a tendency to perspire at night and slight cough; general physical examination negative. Report on ears (Mr. Macbeth):—

	Right ear.	Left ear.
Watch	6 in.	12 in.
Rinné test	+	+
Swabach	5 secs.	3 secs.
Cold calorie test	40	60

No nystagmus. Membranæ tympani normal.

The temperature was normal: no T.B. were found in one specimen of sputum. Radiography of sputum showed one small healed focus at the *hilum of the left* lung: in the abdomen there was no evidence of any tuberculous or calcified glands. The Wassermann reaction was negative in the blood and cerebro-spinal fluid.

It seems probable that the general symptoms which preceded the meningitic manifestations represent a tuberculous bacillæmia, with a lodgment and the development of tuberculoma in the posterior fossa in relation to the L. VIII (and VII.) nerves. In this instance there was a pure tuberculous meningitis possibly confined to the posterior fossa and the meningitis was not the expression, as it usually is, of a general miliary tuberculosis. The improvement in the general condition and the partial recovery of the L. VIII nerve all point to the fact that the infection has been overcome and the local lesion is healed or healing.

FEMORAL HERNIA ASSOCIATED WITH PARTIALLY DESCENDED TESTIS

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The following case illustrates the rather unusual association of partially descended testicle with a femoral hernia.

A well-developed labourer, aged 23, was admitted to Birkenhead Municipal Hospital on Jan. 6th, 1935. He stated that a lump appeared in his right groin twelve months previously, and that he had never been able to reduce it. Thirty hours before admission he was seized with acute abdominal pain, and since then had vomited thrice. His bowels opened well on the day of admission, and there was no abdominal distension.

Examination showed the absence of the right testis from the scrotum, and the index-finger could not be passed into the right inguinal canal. A swelling about the size and shape of a normal testis was found occupying the right femoral canal. It was irreducible and gave no impulse on coughing. The mental condition of the patient was such that little reliance could be placed on his history of the duration of the condition, or of the absence of testicular sensation, so that it seemed possible that we were dealing with a femoral type of ectopic testis. The femoral canal was exposed by the inguinal route, and an ordinary femoral hernia was found containing a knuckle of small intestine. The intestine was viable, and the Lotheisen operation was completed. In the inguinal canal an extremely atrophic testis was found with an associated hernial sac. The testis was removed since it appeared to be little more than fibrous tissue. The inguinal sac was dealt with and the operation completed in the usual manner.

I have to thank Mr. R. A. Grant for permission to publish this case.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

At a meeting of this section held on April 9th the chair was taken by Dr. David Forsyth, the president, and Dr. J. R. Rees opened a discussion on the Problems of

Out-patient Clinics for Psychoneurotics

He asked his audience to set in order the various localities in which they would advise a poor, obsessional patient to live if he wanted to find provision for treatment. Much more information was needed about the activities of clinics throughout the country; often information was obtained by accident. There was urgent need for treatment; R. D. Gillespie had estimated that one person in thirteen in these islands needed psychological treatment, and few would quarrel with this estimate. There were 162 clinics or early treatment centres in the British Isles, but most of them provided only a diagnostic service, and less than half could provide adequate treatment, including persuasion, re-education, suggestion, or mental analysis. Probably not more than thirty treatment clinics were available for the poor. There was little to be said in favour of associating the clinic with the mental hospital, which still scared people, but there was much to be said for making it a part of a general hospital. It was not, however, helped by the bustling medical atmosphere of a hospital. Perhaps the ideal location was a special building attached to the general hospital, so that close liaison could be maintained while the psychotherapeutic work was able to provide for its special needs of more medical time, more quiet, less nursing, and more sociological approach. Much was to be gained by seeing children and adults in the same clinic. The only real early treatment of mental disorder was the treatment of childhood difficulties.

Some 46 per cent. of the cases coming to such a clinic suffered from anxiety neuroses; 13 per cent. from conversion hysteria; 11 per cent. from obsessive-compulsive neuroses; and 2 per cent. from neurasthenia. It must be clear that the clinic did not deal with the mental defective. No more than 5 per cent. would be referred to mental hospitals. In many of the clinics established under the Mental Treatment Act, 1930, this figure rose as high as 22 per cent. This suggested that psychoneurotics were not so often referred to these clinics which were associated with mental hospitals and staffed by their officers. Since the psychoneurotic problem was so great, attention of local authorities should be directed to the need. The services of the clinic should be available for the courts, and the provision of beds would undoubtedly increase its efficiency. Each clinic must acquire a body of information about services of all kinds available to patients. The staff should include physicians with adequate training in psychopathology and psychotherapy. The primary aim must be therapeutic. The points of view of the mental hospital and the psychopathologist must be coördinated to the service of the clinic. Work might, for the time being, be concentrated on the more intelligent type of patient; for the others, the methods of the general hospital were likely to be successful. There was no age limit; a child of a few months could be helped through its parents, and benefit had been obtained in patients of seventy and over. The standards of treatment should be in every way comparable with those of private practice, every bit as careful and accurate and unhurried. The educational value of the clinics was fully as important as in any other branch of medicine; the uncured—or cured—neurotic patient produced a greater effect on society than the corresponding surgical patient. The out-patient problem of the future would demand a great increase in the number of trained and carefully picked psychiatrists. Mildly pathological motives were responsible for most people's interest in psychology. The cost of private treatment would always be a difficulty, and the State would have to concern itself with much of the treatment. Group treatment by suggestion was possible and time-saving. For the difficult child, the team method seemed to be the best that could be devised. The social service of the clinic was useful for adults as well as children. The shortage of trained medical psychotherapists might make it necessary to recognise a body of lay workers similar to the Chartered Society of Trained Masseuses.

Dr. E. Mapother said that the Maudsley Hospital was much more a diagnostic centre than was the Institute of Medical Psychology. Most clinics were not and could not be confined to psychoneurotics.

Incipient organic and psychotic cases were inevitably treated. In some localities the mental hospital might well prove to be the best place for the clinic; unfortunately, the psychoneurotic in the general hospital tended to drift to the neurological rather than the psychiatric department. The hysterical reaction was common among those of rather low intelligence, and anxiety was found in all grades. The appointment system was most desirable so far as it could be arranged, but was very difficult in a large diagnostic clinic.

Dr. JOHN RICKMAN said that psycho-analytic clinics could not cope with the thousands of people needing help; the turnover did not amount to much more than thirty a year. The interest of their work lay in its relation to research. The psycho-analytic clinic might not treat many people, but it trained a large number of workers, and the training was exceedingly long and arduous. Turkey and Russia, when facing a great problem of education, had found that the first task was to get a body of teachers. The first problem of psychotherapy was to provide a great number of competent workers; the rest would follow. Freud had once said that the best method of reducing the time of an analysis was to do it properly; he would probably say that the answer to the problem of the psychoneuroses was the adequate training of psychotherapists.

Mrs. DOROTHY HARDCASTLE spoke for Dr. R. D. Gillespie, who was not able to be present. He agreed that clinics must not be run for psychoneurotics alone, and that training could not be divorced from the mental hospital. There was great need for a critical attitude towards results and for control groups treated by various methods. A great disadvantage of the clinic in the general hospital was the heavy case-load and prevention of selection; coördination was, however, favoured, and this was very important. Psychiatry should be an integral part of general medicine.

Sir ROBERT ARMSTRONG-JONES recalled the foundation of the out-patient clinic at St. Bartholomew's Hospital, and the opposition it had encountered. The line between psychosis and psychoneurosis was not easy to draw, but was important. The West Riding Mental Hospital had had an out-patient department in Crichton Browne's time, with Hughlings Jackson and Ferrier on the staff.

Dr. RALPH NOBLE said that correct diagnosis, in the first place, was essential, and involved very thorough investigation. In his experience a quiet atmosphere could be found in a general hospital if sought. The use of sedatives should not be entirely neglected—even if the patient was laying bare his soul. The clinic should be separate from the general hospital, but very closely allied to it. Amidst the great number of patients needing help, it was not possible to allot a thousand hours to every patient. Psycho-analysis, apart from research, was impracticable. He liked to give a whole day to a new case, working out the important factors, and giving the patient something good to go home with so that he came again. The psychotherapist must be a psychiatrist. One of the best trainings was a period of general practice. A physical examination was of the greatest importance.

Dr. W. C. SCOTT described out-patient therapeutic work at the Maudsley Hospital of 3673 patients: 32 per cent. suffered from neuroses, 36 per cent. from functional psychoses, and 11 per cent. from neurasthenia. Many had serious psychoses. Different types of service were needed for these different types of patient, and therefore a general psychiatric service should be available. The average time per visit had been eleven minutes, ranging from two minutes to an hour and a half. The ideal seemed to be to have the clinic associated with a psychiatric hospital. Psychiatric problems were related to the whole problem of public health. Adult and child clinics should feed each other. Neuroses were found in all grades of intelligence; high I.Q. was not so necessary, even for psycho-analysis, as had been thought. The most pressing need for the future was the development of psychiatric hospitals.

Dr. DORIS ODLUM found that her figures from Bournemouth and Hove corresponded very closely with those of Dr. Rees. Bed facilities were most essential; of 1000 cases, 10·6 per cent. of the Bournemouth and 8·6 per cent. of the Hove cases had been admitted for rest or change of environment. Of the first group, 83·7 per cent., and of the second group, 67·5 per cent. had recovered or were much improved. These patients could not have achieved good results as out-patients. "Daily out-patients" was an institution that helped many who could not be admitted, or did not need to be. The patients spent their whole day living in the hospital under its routine. The arrangement had proved most valuable and might well be extended.

Dr. LOUIS MINSKI said that the North London clinics, opened as departments of the Maudsley Hospital, had begun as diagnostic clinics, but had had to become therapeutic. Many of the patients were of low intelligence, but had responded well to psychotherapy. Quite long interviews were given, supplemented by special appointments at the Maudsley. A skilled and highly trained social worker was essential.

Dr. NEUSTATTER discussed methods of treatment. Often "first aid" could be given, but for real analytic work three-quarters of an hour three times a week was desirable. A thorough understanding of the case did not necessarily enable the physician to do anything about it. It was a great pity to separate psychiatry and psychotherapy. The psychotherapist who never saw psychiatric patients was apt to get out of touch from the diagnostic angle.

Dr. D. N. HARDCASTLE described the initiation of an out-patient and child guidance clinic at the Herts Mental Hospital. The object of locating it there had been to abolish the stigma of the asylum. The clinic was housed in the mental hospital but run by a staff from London, and this fact broke down the patient's prejudice. If beds were needed the patients entered as voluntary boarders. A similar clinic might well be run in every mental hospital.

Dr. T. E. A. STOWELL regarded "prophylactic treatment" as a contradiction in terms. The best prophylactic for mental disorder was administered by the boot of the older boy at the public school. The sickness due to psychical disorders was a tremendous charge on capital, and employers would readily support clinics if a cast-iron case could be presented to them.

Dr. LETITIA FAIRFIELD said that the Maudsley clinics were very extensively used by the public assistance department of the L.C.C., and were regarded as of the greatest possible value. Patients who had been on the public funds for a very long time were returned to work after treatment. The clinics were also very valuable educationally in assisting adjustment to work and preventing the genesis of the young criminal. The value of the in-patient bed and of multiple methods of disposal of the patient could not be exaggerated. The psychotherapeutic clinic would be of the less value the more it was left isolated.

Dr. CLIFFORD ALLEN suggested that neurologists were not yet fully educated in psychotherapy, but believed that neuroses were due to constitution and constipation, and could be cured by bed and bromide.

Dr. STACEY WILSON emphasised the effect of the colon on the mind. If the colon were tender in a mental case benefit would be obtained from intestinal antisepsis and antispasmodics.

Dr. A. E. CARVER described an experiment that failed: the Nerve Hospital at Birmingham. Its initiation had provoked great opposition among the medical profession. It had had to compromise, and cease to be a psychotherapeutic hospital. The first step was to convert the doctors.

Dr. REES replied.

ROYAL SANITARY INSTITUTE

AT a sessional meeting held in London on April 9th to consider the problem of

Maternal Mortality

Mr. EARDLEY HOLLAND dealt with factors of special interest in maintaining the present rate of mortality. One of these was an unfavourable change in the methods of obstetric practice. In the last 15 to 20 years there had been a remarkable widening of the indications for intervention during labour, in spite of the efforts to frustrate it on the part of leading teachers and text-books. In speculating on the factors which had led to this he suggested that the following had been chiefly responsible: (*a*) The increasing employment of analgesics and anæsthetics which have by now become almost universal; in a certain proportion of cases these slow down labour and lengthen it, weaken the natural forces, and so lead to an increase in the forceps-rate. (*b*) The hundreds of little hospitals giving local practitioners the opportunity of performing Cæsarean sections and other obstetric operations. The number of Cæsarean sections had increased in an astonishing manner. In the (final) Newman report 160 sections were reported in the second series of 3805 deaths investigated; many of these had been done after previous attempts at forceps delivery. "There may be a tendency," the report suggested, "to resort to Cæsarean section as treatment of complications of labour, perhaps without due consideration of other methods of obstetrical treatment." Whitridge Williams, in the fifth edition (1923) of his text-book, explained the rising mortality of childbirth on the supposition "that many practitioners in urban areas have been led astray by the teachings of those who regard labour as a pathological rather than a physiological process, with the result that interference upon insufficient indications is frequently undertaken by those who do not fully appreciate the risk involved"; inquiry by the Massachusetts State Medical Society showed that in 1921 after puerperal infection Cæsarean section was the most frequent cause of death. (*c*) Uninstructed antenatal work with its mistaken notions about "disproportion," "post-maturity," the "unengaged head," and the resort in consequence to unnecessary interference. (*d*) Any sort of interference with the course of normal pregnancy and labour, by meeting the demand of the patients for shorter labours, or by extension of the indications for drug or operative induction to suit the convenience of the patient, her friends, the doctor, the nurse. (*e*) An exaggerated idea of the value of the infant's life as compared with the life or health of the mother—due to the fact that nowadays pregnancies were spaced, regulated, and relatively rare. This interesting social change in reproductive method was exerting a great influence on obstetrical procedure. Among adverse factors due to changing habits and social circumstances were (1) a relative increase in primiparity, with restriction in the size of the family; (2) the increasing average age of all mothers, primiparæ and multiparæ.

The problem of lowering the mortality had two distinct aspects. One was presented by the so-called "black" areas. Rochdale was for many years in the unenviable position of having one of the highest rates in England. During the three years 1929–1931 it was 10· per 1000. Study of the circumstances made it appear likely that a large proportion of the deaths had been due to too frequent intervention. The support of the medical profession and of the midwives was enlisted, and the interest of the community in general, and of the women in particular, awakened through the pulpit, the platform, and the press to the medical facts. The women thus were taught to make use of the antenatal clinics, to report at the first sign of any abnormality, and to refrain from attempting to persuade the doctor or the midwife to hurry the course of labour. The "drive" was begun in 1931. For the three years 1932–34 the maternal mortality of Rochdale had fallen from 10 per 1000 to 3·9, or about the same rate as the rest of the country. There was no alteration in personnel; merely a change of spirit and of method. In the hospital it was particularly noticed that women with complications of labour were being sent in increasing numbers at a stage when the complication was capable of being treated with greater safety. To reduce the mortality in the black areas should be easy; but further to reduce the mortality to a figure below the existing best would take much time, and the country must be asked to wait patiently until the standard of practice had been remarkably raised and midwifery was undertaken by a select corps of men and women, based on high-class obstetric institutions. The central and local authorities of this country had made a great mistake in believing that the creation of an efficient obstetric service was merely an administrative problem.

THE SITUATION IN MANCHESTER

Dr. R. VEITCH CLARK (M.O.H. for Manchester) asked for consideration of a few facts which had come to light in the practice of the maternity service of Manchester. The figures for puerperal sepsis showed a definite fall in the last four years from 1·7 to 1·0 per 1000 births. The rate for non-septic maternal deaths, which was 2·8 for the quinquennium 1926 to 1930, fell to 2·0 in 1932, and then rose remarkably in 1933 and 1934 to 3·4. During the past four years there had been on the average just over 6000 women seen at the clinics in the city, excluding those held at the voluntary hospitals, each woman making 4–5 attendances. The total number of births in round figures was 12,000, so that over 50 per cent. of the pregnant women were being seen antenatally by the public medical service. In the seven years previous the annual number of antenatal attendances varied from 1400–8000. The fall in sepsis might, he thought, be definitely associated with this fourfold increased antenatal service. Conditions calling for interference were regarded as one of the prime sources of puerperal sepsis, and these could be recognised to a considerable extent by antenatal care. But what about the non-septic puerperal deaths? In the years 1926–29 the average number of deaths from eclampsia was 7; in 1930–33 the average was 3·4—rather less than half. Antepartum hæmorrhage gave an average of 6·5 deaths per annum in 1926–29, an average of 2 in 1932–33. The lowered incidence of these two complications continued up to the present year. Eclampsia was recognisedly a toxæmic death, and half at least of the serious cases of antepartum hæmorrhage were probably toxæmic in origin. In the period 1933–34 placenta prævia caused 5 deaths in 1933 and 9 deaths in 1934, as against 1·7 for the three preceding years. The figures, although not large, did suggest that antenatal work had contributed to a fall in puerperal sepsis and in the recognised toxæmias of pregnancy.

Dr. Veitch Clark had analysed the source of professional attendance on childbirth in Manchester for the years 1930–33 (see Table). In 1933 out of 12,633 births, 4362 were attended by midwives, 971 by doctors, and 6088 went to hospitals and nursing-homes. The balance of 1,212 cases were attended in their own homes by the extern practice of St. Mary's Hospital. Over 10,000 received attention either from midwives or in hospital. Of the 110 midwives in the city practising midwifery only 50 were dependent solely on midwifery for their living, and 18 of these lived with relations. Of the 60 others, all married women, 45 were definitely not in full-time practice, and 15 also carried on domestic duties. No woman, he said, could maintain her manual skill and sustain her knowledge unless fully occupied in the practice of her profession and assured of a reasonable competency. He would prefer a scheme whereby the midwives were part of the extern connexion with a hospital with an income guaranteed by the local authority. Only 900 cases per annum out of the 12,000 were attended by doctors in their private capacity, with additional 2413 cases on the formal request of midwives. There were 650 practitioners in active work in Manchester, and obviously experience in obstetrics was not available in sufficient amount to maintain skilled practice. That being so he saw no practical solution of the difficulty in a revision of the medical curriculum, but rather in the development of post-graduate work. But while expert work was essential the enlightened coöperation of the mothers should be secured by direct personal contact in antenatal and postnatal clinics.

City of Manchester: Births Attended by Doctors and Midwives

Year.	Notified births.	Domiciliary cases attended by midwives.		Domiciliary cases attended by doctors.			Confinements in hospitals and nursing-homes.	St. Mary's Hospital district staff (external practice).
		Total.	Doctor called in by midwife.	Attended by doctor and midwife as maternity nurse.	Attended by doctor alone.	Total of doctors' cases.		
1930	14,310	6,142	3,236	1,102	562	1,664	5,318	1,186
1931	13,480	5,361 *4,409	2,874 †952	994	470	1,464	5,594	1,061
1932	13,114	5,031 *4,169	2,538 †862	850	240	1,090	5,932	1,061
1933	12,633	4,362 *3,550	2,413 †812	741	230	971	6,088	1,212

* =Midwife only present at birth. † =Doctor actually present at birth.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 6TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2256; diphtheria, 1264; enteric fever, 28; acute pneumonia (primary or influenzal), 1486; puerperal fever, 45; puerperal pyrexia, 112; cerebrospinal fever, 36; acute poliomyelitis, 1; encephalitis lethargica, 12; continued fever, 1 (Battersea); dysentery, 20; ophthalmia neonatorum, 75. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 13th, was 3737, which included: Scarlet fever, 1122; diphtheria, 1602; measles, 22; whooping-cough, 347; puerperal fever, 23 mothers (plus 8 babies); encephalitis lethargica, 270; poliomyelitis, 2. At St. Margaret's Hospital there were 17 babies (plus 10 mothers) with *ophthalmia neonatorum.*

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 29 (0) from measles, 8 (1) from scarlet fever, 24 (4) from whooping-cough, 45 (7) from diphtheria, 37 (12) from *diarrhœa and enteritis* under two years, and 184 (33) from influenza. The figures in parentheses are those for London itself.

The number of influenzal deaths remains almost stationary, the reported deaths for the last few weeks (working backwards) being 184, 181, 175, 145, 139, 83, 91, 83, 91, 71, 56. This week these deaths were reported from 59 great towns, Manchester reporting 15, Birmingham 10, Portsmouth, Sunderland, and Stoke-on-Trent each 7, Blackburn, Smethwick, and Swansea each 6, Croydon and Liverpool each 5. (During the same week Glasgow reported 11 deaths, as against 33 in the previous week.) Wigan, Birmingham, and Wolverhampton each reported 3 fatal cases of measles. Three deaths from diphtheria occurred at Bournemouth and at Sheffield.

The number of stillbirths notified during the week was 275 (corresponding to a rate of 44 per 1000 total births), including 44 in London.

REPORTS AND ANALYSES

SEAGER'S EGG FLIP

(SEAGER, EVANS AND CO., LTD., MILLBANK DISTILLERY, DEPTFORD BRIDGE, LONDON, S.E.8)

THIS preparation is a thickish yellow permanent emulsion tasting pleasantly of egg and sweetened wine. When analysed, the following results were obtained:—

Alcohol	20·0 per cent. (by volume).
Total solids	14·0 ,, ,,
consisting of—	
Carbohydrates	8·0 ,, ,,
Proteins	1·71 ,, ,,
Fat	3·26 ,, ,,
Mineral matter	0·4 ,, ,,

Preservatives were tested for with negative results. The analytical figures are consistent with a 10 per cent. emulsion of egg-yolk in a sweetened wine of 20 per cent. alcohol content.

This "flip" is a convenient and agreeable form of taking eggs. In addition it is an obvious food tonic which is available for consumption at a moment's notice, and therefore particularly suited for use in the sick-room.

SCARBOROUGH HOSPITAL.—It was stated at the annual meeting that £300 was lost last year through road accidents. The Mayor pointed out that it was no credit to the motoring public as a whole that they did not respond more freely towards the cost of these accidents. The new hospital is being built, but there has been some delay in its progress because of the underground water at the foundations. A further £8000 has been added to the funds but £20,000 is still required. The new hospital will cost about £5000 more to run than the old, and the board has decided to adopt a contributory scheme.

REVIEWS AND NOTICES OF BOOKS

Human Sex Anatomy

By ROBERT LATOU DICKINSON, M.D., F.A.C.S. London: Baillière, Tindall and Cox. 1934. Pp. 145. 45*s.*

"It appears well within bounds to affirm," says the author in a foreword, "that many of our present beliefs concerning average sex experience and normal sex life have the status of surmises standing on foundations no more secure than general impressions and scattered personal histories."

That Dr. Dickinson has devoted much of his life to establishing on proper foundations our knowledge of reproductive processes is known to all who have read his previous books. The same end is pursued with undiminished vigour in this volume which is produced, under the auspices of the National Committee on Maternal Health, in a series entitled Medical Aspects of Human Fertility. Dr. Dickinson has brought to bear upon this work an enormous clinical experience. He is gifted with outstanding artistic ability, and the chief feature of this book is the collection of beautifully executed drawings which occupy the last 120 pages of the book. This is divided into two essential parts of approximately equal length. The first, consisting of text and commentary, includes nine chapters on purpose and methods; the bony pelvis; uterus, ovaries, and tubes; the vagina; the vulva and breast; male genital anatomy; the anatomy of coitus; the anatomy of the control of conception; conclusion and programme. To these chapters is appended an extensive bibliography. The second part of the work consists of illustrations assembled under headings which correspond to the chapters in Part 1.

The considerable cost of the book is entirely justified by its format, upon which the publishers deserve congratulation. The illustrations cover a field of anatomy hitherto little explored and fill an important gap in our previous knowledge. Some of them have already appeared in books earlier produced by the Committee on Maternal Health, and have already proved useful. The chief criticism applicable to this volume relates to the author's literary style. This is a source of distress to many readers who have found good cause to regret that Dr. Dickinson does not take as much trouble about the composition of his sentences as he does about the drawing of his pictures.

The book will be especially valuable to specialists in gynæcology and genito-urinary diseases.

L'infarctus du myocarde

By EDUARDO COELHO, Professeur à la Faculté de Médecine, Médecin de l'Hôpital de Santa Marta Lisbon. Paris: Masson et Cie. 1934. Pp. 212. Fr.35.

As far as pathological anatomy is concerned little has been added to our knowledge of infarction of the myocardium since it was first described at the end of the 19th century, though a mass of communications on this aspect of the disease have been published. The clinical picture and symptoms have received less attention, and this accurate clinical and electrocardiographic study is welcome. Prof. Coelho begins in the orthodox fashion with a well-illustrated description of the coronary circulation. Then follows a chapter relating the personal experiences of the author in experimental occlusion of the coronary arteries in dogs. A detailed description is given of the immediate and the remote results of occlusion and their bearing on human pathology is discussed. The rest of the book is devoted to clinical observations on a large series of cases. Dr. Coelho is convinced that this condition is much more common than has yet been realised, and believes that it is nearly always possible to diagnose it. The most important aid to diagnosis is undoubtedly the electrocardiograph. A physician familiar with the clinical picture, who has been able to get an adequate history and an electrocardiogram, should make no error in the diagnosis between myocardial infarction and an acute abdominal condition or a cardiovascular neurosis. As for prognosis, the author is inclined to think that this is not so grave as is thought, and that in most cases recovery may be expected. He admits that it is difficult to prophesy the outcome in an individual case. When death occurs it is nearly always the result of ventricular fibrillation. This is an interesting and informative monograph, which contains an extensive bibliography.

Handbook of Anæsthetics

Fourth edition. By J. STUART ROSS, M.B., Ch.B., F.R.C.S.E., late Lecturer in Practical Anæsthetics, University of Edinburgh; and H. P. FAIRLIE, M.D., Anæsthetist to the Western Infirmary, the Royal Hospital for Sick Children, and the Dental Hospital, Glasgow. Edinburgh: E. and S. Livingstone. 1935. Pp. 299. 10*s.* 6*d.*

THIS edition of Ross's well-known book is the product of Dr. Fairlie alone, and it has lost nothing in the new control. Dr. Fairlie has wisely continued to make no change in the general scheme and arrangement, but has brought the matter up to date. It continues to be, as it has been since its first appearance, one of the best guides for the student or practitioner who is practising anæsthetics. It is not a book for the specialist. Particularly good is the instruction in the use of ether. Nitrous oxide and oxygen is not so well or so carefully handled, no doubt because its use in major surgery is more for the specialist than for the occasional anæsthetist. The brief discussion of the physiology of anæsthesia and of shock is well done, and tells all that it is essential for the student to bear in mind. The print and production of the book are excellent, and we have no doubt of its continued success as a text-book for students.

Textbook of Biology

By E. R. SPRATT, D.Sc., F.L.S., F.I.H., A.K.C., formerly Lecturer in Botany, King's College, London; Head of the Biological Department, Norwood Technical Institute; and A. V. SPRATT, M.Sc., F.I.H., A.K.C., Head of the Science Department, King's Warren School, Plumstead. London: University Tutorial Press Ltd. 1935. Pp. 646. 9*s.* 6*d.*

AS an aid to practical work this book will be found of distinct value, since the descriptions are clear and the diagrams are excellent. The facts described, however, are given little significance in relation to general biological principles. Important subjects such as sex, reproduction, development and growth are hardly mentioned in their dynamic aspects, and the one general chapter on heredity and evolution is inadequate and in many respects misleading. No idea is given of the problems which biologists are at the moment attempting to solve. Since most students taking elementary biology will never study the subject more fully, it is essential that they should be made aware of these broader aspects of the subject which are of importance to every educated man—the view obviously taken by the authors.

Les traitements de l'hypertension arterielle

By MAURICE ROCH, Professeur de Clinique médicale a la Faculté de Geneve. Paris: Masson et Cie. 1934. Pp. 148. Fr.20.

IN this member of a series of monographs on clinical medicine and surgery, Prof. Roch divides cases of high blood pressure into two groups—concordant and discordant. The latter includes patients who have either a high systolic and normal or low diastolic, or a high diastolic and normal systolic reading. Discordant high blood pressure is always attributable to some cardiac cause, such as aortic regurgitation or congestive heart failure, and does not therefore come within the category of vascular hypertension.

The treatment of essential hypertension is considered in the light of various hypothetical causes such as infection, nervous factors, endocrine disturbances, renal lesions, &c. Prof. Roch points out that patients with malignant hypertension are beyond the scope of therapeutic measures. At the other extreme are those who are free from symptoms and require no treatment. It is the intermediate group with which the physician is chiefly concerned. In these cases, although we have no means of dealing directly with the underlying cause of the condition, much can be done to relieve symptoms and to prolong life. Rest and graduated exercise are the two most important measures; dietetic treatment is also important. Drugs are chiefly of value for dealing with the various complications which may arise, such as anginal attacks.

This little book gives a well-balanced account of the present state of our knowledge on its subject, and contains a large number of references to original papers published not only in France but also in other countries.

Aids to Public Health

Third edition. By W. G. AITCHISON ROBERTSON, M.D., D.Sc., D.Litt., F.R.C.P.E., Barrister-at-Law; late Lecturer on Forensic Medicine and Public Health, Surgeons Hall, Edinburgh. London: Baillière, Tindall and Cox. Pp. 208. 3s. 6d.

THIS is an elementary book on public health, dealing with the range of subjects usual in British publications of its kind—e.g., infection, disinfection, industrial hygiene, health of school and pre-school children and of mothers, food, housing, drainage and sewage disposal, atmospheric conditions, ventilation, lighting and heating, water-supplies, disposal of the dead, vital statistics, and sanitary administration. The class of student for whom it is intended is not clear, but it is readable rather than informative, and to school-children, for instance, this might be a recommendation. Unfortunately it contains several mis-statements. One is given the impression that trench frost-bite is a synonym for trench fever; that undulant fever caused by *Brucella melitensis* is becoming more common in this country; that contagious abortion of cattle is associated only with a similar condition in "human females"; that the Clayton apparatus is the usual means of ridding ships of rats; that every child entering school is mentally graded by school medical inspectors; that deficiency of vitamin A leads to rickets, and of vitamin D to scurvy; that one gramme of protein or carbohydrate yields 4·5 calories; that a dairyman must notify tuberculous cattle to the medical officer of health; that a usual standard of cubic space per patient in fever hospitals is 2500 to 3000 cubic feet; that water is usually chlorinated by bleaching powder; that an index death-rate and a standard (*sic*) death-rate are the same thing; that the "Comparative Mortality Figure" represents the corrected death-rate in each town compared with the recorded death-rate at all ages in England and Wales taken as 1000; and that there is some other "Occupational Mortality Figure" in general use. Enough has probably been said to indicate that the book is not suitable for serious students of public health.

Practical Endocrinology

Symptoms and Treatment. By MAX A. GOLDZIEHER, M.D., Endocrinologist, Gouverneur Hospital; Chief of Endocrine Clinic, Gouverneur and Brooklyn Women's Hospitals. London: D. Appleton-Century Company, Inc. 1935. Pp. 326. 21*s*.

Prof. Goldzieher teaches that an underlying veiled endocrinopathy should be suspected in all cases in which the symptoms observed are not satisfactorily explained on the basis of demonstrable pathological changes. He explains that in this book he sets out his personal concepts, and readily admits that some of the views upheld are not universally accepted. These introductory remarks convey a fair impression of the attitude and purpose of the author, whose work—short, simple, and dogmatic—is offered to the general practitioner. Most of the chapters deal with signs and symptoms, and being concise and practical, they will give considerable help to the doctor who, faced with a difficult case, wonders whether he is dealing with some obscure endocrine condition. The critical reader may feel that the endocrinopathies whose pathological basis is established should have been more sharply distinguished from those in which a particular endocrine origin for symptoms is inferred from analogy or circumstantial evidence. The chapters on treatment occupy one-sixth of the book, and they are, like the rest, a mixture of personal predilections with prevailing practice.

Die Folgen der Entmannung Erwachsener

By Prof. JOHANNES LANGE (Breslau). Leipzig: Georg Thieme. 1934. Pp. 177. RM.5.

THIS is an account of a follow-up investigation of 310 male adults who have sustained partial or complete loss of both testes (1) following war wounds (179 complete loss and 68 partial loss), and (2) following tuberculosis (63 complete loss). Their ages when examined by Prof. Lange ranged from eighteen cases under 35 to twenty-three over 55. Half were over 40. At the time when the injury was inflicted half of the cases were under 25. The investigation is based on a very full questionnaire of five pages, filled in by a doctor, asking some 200 questions under ten general headings.

Only a quarter of the cases were free from noticeable after-effects. Though the subjects of the investigation were not unduly affected by epilepsy, and were not predisposed by their injuries to endogenous mental disorders, and suffered comparatively little in social usefulness, it was established that potency was immediately or slowly extinguished in 112 out of 141 cases about whom information on this point was available, bodily changes of a eunuchoid character supervened in a majority of cases, and an appreciable proportion experienced attacks of giddiness sometimes amounting to fainting attacks, loss of vitality, and depression. The length of the period during which the patients were under observation has permitted the author to obtain interesting information upon the lapse of time between the infliction of the injury and the appearance of symptoms. Allowance is made for the fact that most of the subjects were in receipt of pensions, and for this reason did not minimise their disabilities. In general, the most noteworthy conclusion of the book is that the effects of castration vary to a surprising extent from individual to individual.

Eros and Psyche

An Essay on the Constitution and Destiny of Man. By BANCHARA BRANFORD. London: London University Press. 1934. Pp. 379. 12*s.* 6*d.*

Mr. Branford has a fine appreciation of Eastern and Western thought, and has done much to underline their common factors and their essential differences. This book is something more than an attempt to unite Eastern and Western thought; it is a philosophical treatise exhibiting a breadth of learning which will humiliate most readers. Unfortunately the manner of the writing is somewhat staccato, and the high degree of compression on each page makes the work difficult to digest. Those who have a philosophical bent and a background of considerable reading will find it attractive and even stimulating.

Une nouvelle syphilis nerveuse

By PAUL RAVAUT, Membre de l'Académie de Médecine; Médecin de l'Hôpital, St. Louis. Paris: Masson et Cie. 1934. Pp. 196. Fr.45.

Dr. Ravaut tells us that as long ago as 1903 he reported his first series of cases of latent neurosyphilis, that is to say, cases of syphilis in which there were no clinical signs of involvement of the central nervous system and in which the condition could only be recognised by routine lumbar punctures. By following up the cases over a number of years he has ascertained that many of them may completely clear up, whereas others are the precursors of clinical neurosyphilis. The importance of early diagnosis is stressed, because the earlier the cases are treated the more likely is the involvement of the central nervous system to be eradicated, either by chemotherapy or by malaria therapy or by both. It would have added considerably to the value of the book if details of treatment had been given; for example, as regards the comparative value of trivalent and pentavalent arsenic, silver salvarsan and neo-silver salvarsan, bismuth preparations, intrathecal injections, and so forth; Dr. Ravaut has pursued his studies of the subject for over 30 years, and he notes with satisfaction that investigators in France, Germany, and America have confirmed his original observations. He makes no reference however to the important investigations of P. Fildes, R. J. G. Parnell, and H. B. Maitland upon 1314 cases of syphilis among naval ratings, the results of which were published in 1920 by the Medical Research Council under the title "Unsuspected Involvement of the Central Nervous System in Syphilis." These observers found 28 per cent. of their cases to have abnormalities of the cerebrospinal fluid, and they concluded that more definite evidence must be produced before Ravaut's statement that 62 per cent. of cases of secondary syphilis have abnormal central nervous systems could be accepted without reserve.

The changes that may be found in the cerebrospinal fluid are fully described and stress is laid upon the types of cell—the most important being the plasma cells. A coloured plate shows well the appearances of the cells as stained by methyl-green-pyronin (Unna-Pappenheim); by means of the type of cells it is possible to distinguish between the meningovascular and the meningo-parenchymatous forms of neurosyphilis. Dr. Ravaut has done well to collect into one book the results of his extensive researches.

Black's Veterinary Dictionary

Second edition. By WM. C. MILLER, M.R.C.V.S., F.R.S.E., Courtauld Professor of Animal Husbandry in the Royal Veterinary College. London: A. and C. Black Ltd. 1935. Pp. 1141. 21*s.*

Black's Veterinary Dictionary is already well known to those who handle animals, and a new edition, incorporating some of the advances in knowledge which have been made during the last seven years, will be welcomed. In general plan the book resembles Black's Medical Dictionary. Animal management and hygiene receive considerable attention, whilst disease is treated in such a way as to increase the reader's general knowledge and help him to render appropriate first-aid treatment. At the same time it encourages coöperation between the layman and the veterinary surgeon. Fourteen other workers, including some of world-wide repute such as Prof. F. A. E. Crew and Prof. R. G. Linton, have assisted by contributing special articles.

Considerable effort has been made to make this publication comprehensive and useful by extensive cross-indexing, but even now there are some omissions which will affect particularly the non-professional reader. A detailed chapter on dog management and a more extensive index of popular agricultural terms would be useful additions. Prof. Miller has maintained a high standard on all subjects appertaining to animal management and animal hygiene; sections dealing with diseased conditions follow orthodox teaching. With regard to the more specialised subject of bacteriology, the presentation is less satisfactory. In an attempt to render the subject simple, the author and his collaborator have sometimes caused confusion. For instance, steaming for thirty minutes on three successive days is the only method of sterilising medium which is recorded (p. 80). In a table dealing with nomenclature (pp. 1089–1090) bacteria are for some obscure reason tabulated alphabetically, the nomenclature of the American Society of Bacteriologists being adopted. As a result, closely allied organisms such as the typhoid bacillus (Eberthella) and *S. enteritidis* are separated from one another by leptospira, mycobacterium, and other genera. Furthermore, B C G is given generic significance, the name botriomyces is still used for staphylococcus when that organism causes a granulomatous lesion, pasteurella are still classified according to the zoological species of the host, and *Vibrio septique* is given as an appropriate example in the definition of the word vibrio. The unqualified statements (p. 1089) that *Actinobacillus lignièresi* causes actinomycosis and *Leptospira icteroides* causes yellow fever in the human being are misleading.

Taken as a whole, this publication is an excellent piece of work which will bring credit to the author and publisher, and will be of immense value to stock owners throughout the world.

THE LANCET

LONDON: SATURDAY, APRIL 20, 1935

THE POSITION OF OSTEOPATHY

The most recent attempt to obtain State recognition for the cult of osteopathy came to an ignominious conclusion when, at the meeting of the Select Committee of the House of Lords on April 12th, Mr. J. H. Thorpe, K.C., leading counsel for the promoters of the Bill, opened the twelfth day's business by announcing the decision of his clients to proceed no further with the Bill. Two reasons were given by Mr. Thorpe for this unexpected withdrawal. In the first place, he said, it had become clear during the meetings of the Committee that the issue had changed; it was now not so much the desirability of the registration of osteopaths and the regulation of the practice of osteopathy, as the question whether osteopathy could be said to rest upon a scientific basis. This was a matter in which he found himself out of his depth, and on which, "speaking with great respect," it was beyond some of the members of the Select Committee to make a finding. The second reason for the withdrawal was the position of the British School of Osteopathy, an essential feature of the Bill. The promoters felt that they would not be justified in asking for the passage of a Bill which was so intimately bound up with the continuance of this school. So far few will be found to differ from Mr. Thorpe, though many may wonder whether the promoters of the Bill will appreciate the full implication of his remarks. It was the remainder of Mr. Thorpe's speech which aroused an immediate reaction, for he went on to plead, apparently with the concurrence of Lord Elibank, who introduced the Bill in the House of Lords, that the Select Committee should recommend that a Royal Commission, or some equally responsible body, should be set up to inquire into the scientific justification for the theory of osteopathy. Very naturally counsel for the opposing bodies strongly objected to this suggestion. They pointed out that if their lordships proposed to make such a recommendation it was incumbent on them to continue the hearing, since expert witnesses, who had studied the so-called scientific evidence produced, were prepared to say that there was no acceptable evidence before them that osteopathy rested on any scientific basis at all. After considerable argument their lordships debated in camera and then decided to hear two more witnesses of their own selection and to leave it at that.

By an adroit manœuvre the osteopaths have extricated themselves from a difficult position, but we think that a claim made by their counsel that the battle is drawn will meet with little support from the general public. In no contest can the side which breaks off hostilities claim an equal position with opponents who desire to go on. Let us consider the position at the end of the eleventh sitting of the Committee. The representatives of osteopathy had had a clear field, and for some weeks the lay press had been full of the osteopathic theory and the osteopathic lesion. Osteopathy and manipulative surgery, often confused during the sittings, were hopelessly muddled up in the reports; in any argument defence of theory gave way to defiant support of practice as the needs of the moment demanded, and prejudice and bias were freely ascribed to every medical witness. Gradually, however, the issues before the Committee became defined, and now the claims for a scientific basis for osteopathy came up to be examined. Mr. H. S. Souttar, the last clinical witness to be called, had given his trenchant evidence-in-chief and was awaiting cross-examination, and it was known that he was to be followed by experts in various fields, notably pathology, physiology, and anatomy, whose special function was to report on the "scientific" writings on which such stress had been laid. And this was the moment chosen to break off the contest. To the surprise of all who throughout the sittings of the Committee had admired his gallantry and skill, Mr. Thorpe, having made no attempt to combat Mr. Souttar's challenge of fraudulence, threw overboard any defence of the seven Bulletins of the A. T. Still Institute for Research and the rest of the evidence supplied with such impressive zeal by Dr. Macdonald. It is really no explanation for the remarkable course of action to say, as Mr. Thorpe did, "I should like to recall that it is the osteopaths, with the assistance of a noble lord, who have come into the open, who have urged the presentation of this Bill in Parliament; they have satisfied, at any rate, one noble lord, and they are ready to submit with confidence to any issue that is to be decided hereafter by an impartial tribunal." For what does this amount to? We hesitate to suggest that the noble lord was biased, but he accepted a Bill whose main structure required the existence of an institution which has since been entirely discredited; and he attempted to pass through Parliament a Bill which would give legal status to practice founded on a doctrine on the justification for which it is said to be "beyond" a selected group of his fellow legislators to express an opinion. If to try to rush Parliament in this way is to be regarded as a meritorious act, then indeed osteopathy emerges with flying colours from the inquiry. But we prefer to believe that saner opinions will prevail, and that the report of the Select Committee will show that

> ". . . noble statesmen do not itch
> To interfere with matters which
> They do not understand."

THE HEART IN SCARLET FEVER

In scarlet fever of the fulminating type, now rarely encountered, the cause of death may be an acute toxic myocarditis; but the cardiac lesion most often seen in this disease is an endocarditis—sometimes associated with pericarditis—which becomes manifest in the later stages. FAULKNER, PLACE, and OHLER[1] point out that the existing clinical descriptions of "scarlatinal endocarditis" do not agree with one another and that the diagnosis of acute endocarditis in the presence of infection may be very difficult. They are inclined to doubt the quantitative value of the various estimates of its incidence, some of which they quote. Thus J. F. H. BROADBENT (1908) in an analysis of 22,096 cases of scarlet fever found 129 (0·58 per cent.) examples of endocarditis, and A. JOE (1924) reported 61 (0·25 per cent.) with endo- or peri-carditis in a series of 24,102. It may be added that in another analysis ZISCHINSKY,[2] examining 20,000 records of scarlet fever (1902–29), could find only 10 (0·05 per cent.) with evidence sufficient for a diagnosis of endocarditis. In the 7 which proved fatal an "infective" or malignant lesion was found post mortem, while of the 3 which recovered, 2 had had undoubted acute polyarticular rheumatism late in the attack and only 1 had residual mitral insufficiency which could reasonably be ascribed to scarlet fever alone. These analyses are based on records made in different cities (London, Edinburgh, and Vienna respectively) and the material analysed is ample enough to eliminate chance. The difference in the incidence of endocarditis which they reveal is to be ascribed not to defective diagnosis but to variation in the type and severity of scarlet fever and its consistent trend, over the period represented, towards increasing mildness.

FAULKNER and his colleagues have looked at the problem from two angles: they have made electrocardiograms during the acute phase and then have inquired into end-results in the form of chronic valvular disease. During 1932–34 an electrocardiographic study was made of 171 cases of scarlet fever of "relatively mild" character, during and following the acute infection; except that all cases of scarlatinal arthritis were included, no other selection was made. Of these 171 patients, only 11, whose ages ranged between four and sixteen, developed abnormal records; in 5 there was a prolongation of P–R, and in 6 a flattening or inversion of T. There seemed to be no relation between the severity of the illness and the incidence or degree of electrocardiographic abnormalities. Nor were the electrocardiographic and clinical findings altogether consistent: for in 5 cases in which the record was abnormal there were no physical signs, and 3 others had only systolic murmurs; while 17 patients whose records were normal had systolic murmurs (though without other evidence of valvular damage). It was noteworthy also that the abnormality never appeared before the thirteenth day from the onset of scarlet fever, and the authors compare this delayed reaction with the recrudescence of acute rheumatism after a respiratory infection; in 5 of their cases, moreover, the electrocardiographic manifestations coincided with a return of fever. In the second part of their inquiry 600 patients of an average age of 6·3 years were examined 1–3 years after they had been in hospital with scarlet fever. Only 7 were found to have developed signs of chronic valvular disease, but in 2 of these there had been signs before discharge, while 2 others had had rheumatic fever in the interim. In the remaining 3 there was no antecedent history of rheumatism or chorea to account for the valvular disease, and the lesions were indistinguishable clinically from "rheumatic" heart disease. Contrary to the general view, FAULKNER, PLACE, and OHLER did not observe that an attack of scarlet fever lights up an existing quiescent rheumatic cardiac lesion; thus among the 171 cases examined by electrocardiograph during their illness there were 6 with old rheumatic lesions, and only 1 of these had signs of reactivation. Their general conclusion is that all the findings in the acute and late phases of cardiac involvement in scarlet fever are similar to those seen in rheumatic fever following acute tonsillitis. In both conditions there is often a well-defined latent period between the respiratory infection and the secondary constitutional reaction, and in both of them endocarditis may occur with or without an acute migratory arthritis. They believe we are now justified in saying that rheumatic and scarlatinal heart disease are probably identical, and that upon the allergic hypothesis "a properly sensitised individual may respond to an infection with *Streptococcus scarlatinæ* by the allergic reaction known as rheumatic fever." There is no evidence, they add, that this reaction differs significantly from rheumatic fever following other streptococcal infections of the upper respiratory tract.

Most clinicians in this country would agree that, whatever the pathogenesis, the acute polyarthritis of simple scarlet fever is "rheumatic"; but they would incline to the view of HECTOR[3] that "the almost invariable result of scarlet fever upon the heart already damaged by rheumatism is a re-kindling of the old trouble."

CHILDBIRTH AT HOME OR HOSPITAL?

Is the home or the hospital the best place for a confinement? Of recent years there has been a much wider provision and use of maternity beds in hospitals and other institutions, and the fact that during the same time the maternal mortality-rate has increased naturally raises doubt in many minds as to the possible connexion between the two. Conflicting views on this question were put forward at a discussion on maternal mortality at the Royal Sanitary Institute on April 9th. Mr. EARDLEY HOLLAND, who opened the discussion and whose remarks are briefly reported on p. 936, held that the prime cause of a high maternal mortality was insufficient training of the medical profession, leading to meddlesome midwifery. He compared the situation to the British Admiralty sending a battleship to sea with an amateur crew, and suggested that the Rochdale experiment[4] —in which the maternal mortality-rate for the years 1929–31 of 8·90 had been reduced to 2·99 for the three subsequent years by a campaign to make the public and the midwives and doctors (as it was put) obstetrically conscious—proved his contention. Dr. Andrew Topping, under whose auspices as medical officer of health the experiment had been initiated, confirmed Mr. Eardley Holland's view that the previous high rate was caused by too much midwifery, and that the improvement was due entirely to a change of outlook, the expectant mother and her relatives having been educated not to bring pressure to bear on the medical attendant to hurry things up. Another factor was that the doctors sent cases with complications into hospital earlier and the number of failed-forceps cases had been greatly diminished. Dr. W. H. F. Oxley suggested that it was not so much lack of training as the conditions under which he had to work that drove the medical attendant to interfere too much; but since the pressure towards interference is largely removed in confinements in institutions, his plea for confinements to take place at home seemed illogical unless the whole country is to be educated on the Rochdale lines. Dr. R. Veitch Clark (of whose remarks a summary also appears on p. 936) gave, indirect support to the plea for more institutional confinements when he showed that the average number of confinements attended by practitioners in Manchester was only two and a half per annum, and that out of 110 practising midwives only 32 were dependent wholly on their professional earnings for their maintenance. How, he asked, could such a very part-time service be efficient? More than half the confinements in Manchester take place in institutions, but Dr. Veitch Clark would encourage domiciliary confinements by limiting the number and thus improving the practice of midwives, on the lines of the recent report of the Joint Council of Midwifery.[5] Sir Francis Fremantle contributed to the discussion by foreseeing Parliament's willingness to pass even restrictive and costly measures if satisfied that they would have the desired effects.

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[1] Faulkner, J. M., Place, E. H., and Ohler, W. R.: Amer. Jour. Med. Sci., March, 1935, p. 352.
[2] Zischinsky, H.: Jahrb. f. Kinderheilk., 1930, cxxvii., 337.
[3] Hector, F. J.: Arch. Dis. Child., 1926, i., 339.
[4] Brit. Med. Jour., Feb. 16th, p. 304.

Everyone agrees that provision of beds for abnormal cases must be adequate, and that there is still a lack of beds for antenatal cases requiring observation and treatment. But, with the undoubted additional risk from outbreaks of sepsis in institutions, is the costly provision of beds for a high proportion of normal cases justified? Dr. George Buchan, who presided at the meeting, considered that the women themselves have already answered the question by their increasing demand for confinements in institutions; but it must be remembered that in the U.S.A., where domiciliary confinements are almost unknown, the maternal mortality-rate is higher than in this country and is also increasing. Nor is the risk of unnecessary operative interference entirely removed, at any rate for private patients, by confinements in hospital, since in one hospital in Philadelphia we learn [6] that "in a period of six months an operative incidence of 50 per cent. was shown on the private floor service as against 4 per cent. in the ward service." Whether the normal case is to be confined at home or in hospital, it will still be necessary to improve the training and practice of the doctor and midwife, and to educate the public against needless interference. But there must clearly be other factors involved, as the story of the so-called 'black area shows. For at least 50 years these areas have had a rate substantially higher than the rest of England, and no one would suggest that the doctors, midwives, or public in Wales and north-west England are less fully educated than others or less conscious of their responsibilities. Perhaps the investigations now being undertaken by the Ministry of Health will bring to light this unknown factor.

FUNCTIONS OF LYMPHATICS

Our knowledge of the lymphatics and of the part played by them in maintaining the circulation has lagged far behind that relating to the vascular system. This is doubtless due in part to technical difficulties in making direct observations upon lymphatic capillaries. Recently S. Hudack and P. D. McMaster [1] described a delicate technique by means of which living peripheral lymphatic trunks and capillaries are made visible. With a dissecting microscope and micro-injection apparatus, India ink and various dyes may be injected into the ears of albino mice illuminated by light reflected from white porcelain plaques. These authors have applied the method chiefly to a study of permeability of lymphatic endothelium and to the behaviour of lymphatic channels damaged by incisions and burns. When carbon particles have been introduced into them, the lymphatic channels can be effectively photographed by reflected or transmitted light. Using the same method, B. D. Pullinger and H. W. Florey [2] show clearly by sets of photographs taken with the mouse's ear placed on the end of a total reflection rod that injection of hydrokollag containing 1/5 pituitrin (Parke, Davis and Co.) or 1/5000 adrenaline causes no contraction of the lymphatic capillaries, although when the drug escapes into the surrounding tissues it causes a marked contraction of the arteries. Nor does mechanical stimulation of the tissues produce any active response by lymphatic capillaries. The walls of the lymphatics are elastic and can be distended by moderate pressure without sign of rupture or leakage of hydrokollag particles.

An interesting development of the work concerns the part played by the lymphatics in œdema, whether inflammatory or otherwise. It is known that lymphatics are dilated in inflammation, and this is of moment when it is considered that the pressure within them is lower than that in the surrounding tissues. Pullinger and Florey found by injecting the tissues of the mouse's ear with saline, with histamine 1/1000, or with calcium chloride, after filling the lymphatic capillaries with hydrokollag, that dilatation of these vessels was maintained and the accumulation of fluid in the tissues did not compress them. Histological studies of the specimens used for these experiments, and of suitable controls in which hydrokollag had been omitted, suggested that the lymphatic channels are held open by the connective tissue fibres which are attached in considerable numbers to their walls. The dilatation therefore would appear to be of a passive nature.

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[5] The Lancet, Feb. 23rd, p. 457.

[6] Maternal Mortality in Philadelphia, 1931–33. Philadelphia County Medical Society, 1934.

[1] Jour. Exper. Med., 1932, lvi., 223.

ANNOTATIONS

THE METROPOLITAN POLICE LABORATORY

THE opening of the Metropolitan Police Laboratory at Hendon last week was an occasion of real significance. It was an expression on the side of the law of a determination to combat the forces of crime, recognising that those forces had grown more difficult to withstand since the criminal had learnt to enlist science on his side. Everybody is familiar with the activities of those admirable amateur detectives Sherlock Holmes—it is not remembered at the moment whether he had any academic standing—and Dr. Thorndike. No doubt for the purposes of the story the authors, both medical men, assumed that their heroes were masters of matters in connexion with forensic medicine to an extent that no ordinary man of law or ordinary man of medicine could be. Of course this assumption was quite unjust. It has always been the routine in police procedure to carry out, as far as up-to-date knowledge permitted, the intensive researches which Conan Doyle and Austin Freeman attributed to their super-investigators, make scrupulous examinations of the dead body, and of all surface markings and skeletal characteristics. Again, the examination of blood and other stains, and of premises or fomites connected with a possible crime, in order to obtain evidence, has always been conducted by the police authorities, and treatises on forensic medicine give much information on the procedures. But to the rank and file of the constabulary most of this was unknown, even while the necessity for observation of all that might have relation to the circumstances of a crime was complied with. The Metropolitan Police Laboratory will bring this knowledge nearer to the general body of policemen by creating a class of inspectors as experts on the scientific investigation of crime.

The students at the new laboratory will not be taught elaborate physiology, toxicology, and so on. The intention is to create for the metropolitan area a laboratory which can be used for training selected students for scientific work in connexion with criminal cases as they come to the notice of Scotland Yard. Similar institutions to the one now started in London are already at work in Edinburgh and Glasgow, and the need for a laboratory had been for some time felt in London. The school is starting with 60 students whose claims for the special training have been suitably investigated, and among them are young police officers of promise and experience, and recruits from various universities. A certain rank in the constabulary is given to these cadets, whose pay suffices to discharge their comfortable accommodation and an adequate mess bill, while they remain to this extent on probation, that at the conclusion of the course they will have to sit for a passing-out examination. The curriculum, which is under the direction of Dr. James Davidson, lately pathologist to the Royal Infirmary, Edinburgh, includes (among other things and mainly) instruction in an adequate amount of anatomy and physiology, in chemistry and microscopy, the lessons here being directed almost exactly to those difficulties, the explanation of which leads to the acquittal in detective novels of apparently incriminated persons.

The laboratory will, it is hoped, prove a stimulus to the institution in suitable places throughout the country of similar laboratories, and two or three of our large provincial centres have already started work on these lines.

ASTHMA

Sir Humphry Rolleston has summarised[1] the work of the Asthma Research Council since its constitution in 1927 and adds a bibliography of publications by the Council's research workers and medical advisory committee (1928–34). It is interesting to read the original programme of research in the light of subsequent developments. Good work has been done in describing more clearly the natural history of asthma, its relation to other allergic disorders, its constitutional basis, and its prevalence. The value of respiratory exercises and the importance of psychological factors in the disease have been clearly brought out, and this is probably the chief contribution made to therapeutics. In the majority of cases asthma begins in childhood, and at this period, before the asthmatic habit has become ingrained and gross damage has been done to the respiratory system, there is a reasonable chance of arresting it by breathing exercises and by the removal of psychological stimuli. Nothing very novel has come from the study of the parts played by nasal abnormalities, by protein sensitisation, and by bacteria and other organisms, for these had been exhaustively considered by previous workers; indeed, it seems unlikely that further striking progress will be made on these lines. The origin and significance of "urinary proteose" remain obscure. It is surprising that so little has been done to study the effects of diet in asthma, for lay members of the Council expected great results from this, and though the difficulties of dietetic experiments on ambulatory patients are great, they should not be insurmountable. The pharmacological side also seems to have been neglected, except for studies on the relative merits of ephedrine and pseudo-ephedrine, and experiments with dioxyphenylalanine. Quite apart from research on new synthetic or pharmacological principles akin to adrenaline and ephedrine, there is an obvious need for clearing the jungle of symptomatic remedies for asthma, in the same way that the therapeutics of heart disease and anæmia have been rationalised in the past few years. It should also be relatively simple to discover what drugs can best be combined with ephedrine to prevent the unpleasant side reactions so common with this drug. There are more than enough patients for controlled clinical investigations of this kind, which seem likely to offer a better return than highly technical methods of preparing vaccines or grape-shot mixtures of antigens for inoculation.

MEDICAL TREATMENT OF GLAUCOMA

IT is generally held by ophthalmic surgeons that non-operative treatment of glaucoma is unreliable and should only be resorted to either as a preliminary to operation or in cases where for one reason or another operation is impracticable. But this opinion is not universal. Prof. G. H. Burnham of Toronto has recently advocated[2] his "combined treatment" as a substitute for operation in most cases, and many surgeons have succeeded in arresting the progress of the disease in very chronic cases by the continued use of eserine. Some years ago it was discovered that adrenaline has the power of diminishing intra-ocular tension, and Carl Hamburger of Berlin had some success with a related drug, called Lævo-glaucosan, which, although it dilates the pupil, has the property of bringing down intra-ocular tension. Josef Böck, writing[3] from the University eye clinic of Vienna, deprecates the use of this and other drugs such as histamine which cause so much chemosis as to make operation, if it should be decided on, more difficult. The intravenous injection of hypertonic solutions of salt or sugar, which have also been recommended to bring down the tension, may cause collapse in elderly patients. The only reliable palliative is the time-honoured treatment by drops of eserine or pilocarpine, carefully regulated as to strength and time of administration according to the particular needs of the patient. In a more recent paper in the same journal[4] Hamburger, whilst admitting that his first hopes from glaucosan were too optimistic, still claims that this drug is indispensable in the treatment of certain cases of secondary glaucoma—viz., those due to iritis in which dilatation of the pupil may be desirable, and any operation on the iris is likely to fail. He also claims successes in cases where an operation for glaucoma has failed to cure. Böck replies[5] that his remarks applied only to primary glaucoma. At the same time he doubts the utility of glaucosan in any case. There are certainly cases in which it gives rise to more pain than can be tolerated.

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[1] A Report on the Work of the Asthma Research Council from 1927–1934. By Sir Humphry Rolleston, G.C.V.O., F.R.C.P. Obtainable from the Council, c/o King's College, Strand, W.C.2.

[2] Brit. Jour. Ophth., 1934, xviii., 704.

THE PREVENTION OF DIPHTHERIA

DURING the last fifty years the death-rate from diphtheria has been more than halved. In the quinquennium 1876–80 the death-rate from diphtheria and croup was 726 per million children at ages under 15 years; in 1926–30 the rate was 302, or but 42 per cent. of the level recorded half a century previously. So great and satisfactory an improvement must not, however, lead to an attitude of complacence. Absolutely diphtheria is still one of the important killing diseases of childhood—in the five years 1928–32 there was an average annual total of 3000 deaths attributed to it, while at the present time the country is passing through an epidemic with an incidence considerably above the average of the past decade. Relatively as well the position is not one for complete satisfaction. While noting that diphtheria has fallen by 58 per cent. in fifty years it must be observed that over the same period of time the death-rate from measles fell by 64 per cent., from whooping cough by 73 per cent., and from scarlet fever by 97 per cent. Of the four major infectious diseases of childhood diphtheria has declined the least. It is clear that methods of prevention energetically pursued may gain substantial rewards, and there is little doubt that artificial immunisation universally adopted offers the most hopeful means of securing them. Some of the evidence in favour of immunisation is presented by Sir Leonard Rogers in the current number of *The Fight Against Disease*, the quarterly journal of the Research Defence Society. From Graham Forbes's monograph[6] he tabulates the results of inoculation of the staffs of various diphtheria isolation hospitals, for this he regards as the most severe test immunisation can be put to, since nurses are exposed to grave danger of infection from the cases they attend intimately and for long hours. Clinical attacks are, naturally enough, sometimes recorded amongst the "protected," but such cases are invariably mild, while in addition nearly every hospital reports an appreciably lower incidence since inoculation of their staff was undertaken. From children's residential institutions there is also abundant evidence that by systematic Schick-testing and inoculation the incidence of diphtheria can be greatly mitigated or almost abolished. The classic work, which Sir Leonard Rogers quotes in some detail, is that of Sheldon Dudley at the Greenwich Hospital School. Here, between 1919 and 1927, there was an annual yearly average of 42 cases; since inoculation there have been only 4 cases in four years, three of which were in "unprotected" children. There seems no doubt that if we could extend immunisation to the majority of the child population the death-rate from diphtheria would show a further substantial decline.

In one particular we must correct Sir Leonard Rogers. He states that "diphtheria is only second to measles as a cause of mortality from children's infectious diseases." He has overlooked whooping-cough, which in every quinquennium from 1866–70 to the present time has shown a considerably higher death-rate than diphtheria and, indeed, in 1921–30 was as a cause of mortality the leader of the four major infectious diseases of early life.

HOSPITAL ADMINISTRATION FOR ALL

THE extent of responsibilities shouldered severally by the superintendent, the matron, and the secretary of a large hospital tend to vary somewhat with the personalities concerned, with their relative length of service and with local tradition. Whatever the distribution of authority, it is of the utmost importance for smooth running that each should know something of the organisation of the departments controlled by the others. For this reason, among others, a book[1] by Miss E. MacManus, matron of Guy's Hospital, entitled "Hospital Administration for Women," will be useful also to men. A light touch and an approach which invites friendly interest conceals the fact that an extraordinary amount of detailed information, largely unobtainable elsewhere, has been packed into its six sections. The first of these deals with personal and central administration and is subdivided into chapters on the work of the superintendent's office, the duties and responsibilities of the matron, and the functions of the various committees generally appointed by the Court of Governors of voluntary hospitals. (The corresponding organisation of a municipal hospital is more briefly stated in an appendix.) In this section a scheme is outlined for a nurses' representative council of 15 members, including the matron, 12 members being elected by probationers and 2 by staff nurses. Such a council, which is established at Guy's and at certain other hospitals, affords the nurses opportunity for making representations affecting their well-being and education, which is greatly appreciated. Matters of personal conduct and discipline are, we understand, specifically excluded from discussion. The following section of the book is devoted to the nursing staff—the administrative hierarchy being clearly defined and their duties in a large hospital of 600 beds described with precision. The chapter on the home sister and the nurses' residence gives explicit directions for methods of promoting the nurses' comfort and convenience in sickness and in health. It is noted that the provision of one definite place where nurses may smoke clears the air figuratively, if not actually. The ward sister, "arbiter of her small kingdom," is shown in her various capacities: accompanying the house officer on his rounds and carrying out the treatment ordered; feeding the patients; teaching the nurses; keeping the ward orderly and dealing calmly and without fluster with special situations, including anything from confiscation from patients of razors and knives or illicit drugs, and detection of faked pyrexia, to discrimination between two or even three wives who claim the right to sit by the bedside of a dying man. This last situation, as Miss MacManus observes: "requires the wisdom of Solomon, for the obvious solution is rarely the right one, and the legal solution is rarely the happy one." If the patient is conscious, she adds, his wishes should be carried out; it is when he is unconscious that the ward sister's ingenuity may be taxed.

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[3] Wien. klin. Woch., Dec. 28th, 1934, p. 1591.

[4] Ibid., March 15th, 1935, p. 335.

[5] Ibid., p. 336.

[6] Diphtheria, Past and Present. London. 1932.

[1] Hospital Administration for Women. By Emily MacManus, Matron, Guy's Hospital, London. London: Faber and Faber. 1934. Pp. 356. 15s.

The chapters on the nurses in training and already trained, and the preliminary and hospital training school in Section II show, as would be expected, an intimate knowledge of the complex task of organising the curriculum of a group of young women whose preparation for entry, after examination, to a State register must include previous experience in every important department of the hospital, as well as attendance at lectures and demonstrations. Schedules of quarterly changes of posts, rotas of off-duty times, charts showing distribution of work and time-tables of lectures and classes are set out and will assuredly prove useful to less experienced administrative officers. Section III deals with the domestic staff, including porters; Section IV with works, central power station, laundry, linen stores, dressmaking department, steward's stores, hospital kitchens, catering, and the dispensary; and Section V with schools and associations connected with the hospital, such as schools of massage, medical electricity and actinotherapy, radiography, midwifery, and almoning, as well as with antenatal and postnatal departments, the infant welfare centre, and voluntary workers.

We have already hinted that the title of this work is too modest, and should add that less than half is devoted to the nursing side of hospital life. Almost anyone concerned in hospitals—from the senior member of the consultant staff to the junior recruit in the secretary's office—will do his work the more efficiently if he not only reads it, but keeps it by him for frequent reference.

A NEW HOME FOR THE B.D.A.

THE official opening of the new home of the British Dental Association, described in our news columns, is a proper occasion to recall the part which the Association has played in the progress of dental science and practice. Sixty years ago the conditions under which dentistry was practised in this country were becoming intolerable to those who had the welfare of the profession at heart, and a Dental Reform Committee was formed whose labours culminated in the passing of the Dentists Act of 1878. Their preparatory work done, this body resolved itself into the representative board of the British Dental Association which was finally incorporated in 1880. The first work of the new Association was a scrutiny of the credentials of applicants for admission to the Dentists Register, and this laid bare the fact that the Act had in it a fatal flaw which as the years passed became a menace, only to be removed by the Act of 1921, which finally closed the door to any one who had not passed through the schools and obtained a dental diploma. The Association, which started in 1880 as a centralised body with a membership of 120, had increased its membership by 1884 to 600 by attracting five provincial societies as branches. Branches and membership have grown until there are now 16 branch areas, each divided into sections, with a total membership of 4239, affording opportunities throughout the country for the cultivation of scientific study and social intercourse. Through this organisation broad lines of policy can be submitted to members and a prompt decision reached. The Association has not only raised the profession of dentistry; it has behind it a long record of public dental service, both practical and educative in the popular sense. Fifty years ago there was no school dental service, indeed little of any kind. In 1883 the Government of the time declined to recognise oral hygiene even as coming within the scope of an international health exhibition. The school dental service, imperfect though it still may be, owes its development entirely to the efforts of the Association. Adult dental health has not been disregarded, and when *additional dental benefit* was instituted the Association prepared a comprehensive scheme of public service making dental treatment available to millions. Persistent representations to the departments concerned have seen fruit in the present complete dental service now provided for the Navy, Army, and Air Forces. All these advances can be studied in the *Journal* of the Association which in March, 1880, took over the *Monthly Review of Dental Surgery*, and has since 1903 been known as the *British Dental Journal*.

MURK JANSEN

THE death of Dr. Murk Jansen, of Leyden, at the age of 67, has deprived orthopædic surgery of one of its outstanding leaders. Jansen was born at Zaandam and came of a line of schoolmasters, but at an early age expressed a desire to choose medicine as his future career. Loyalty to family tradition, however, compelled him to become a teacher of English until the age of 25, by which time he had accumulated sufficient funds to enable him to enter the University of Leyden as a medical student. He graduated in 1900—he was then 33—and for the next four years acted in turn as prosector in anatomy and assistant in the surgical clinics of Leyden and Amsterdam. His interests soon became directed towards orthopædic surgery, and, after settling in practice in Leyden, he was appointed lecturer in this subject in his old medical school. Jansen soon acquired one of the largest private practices in his specialty on the Continent, but he never allowed material success to deflect him from an unceasing inquiry into the science of orthopædics. Aided by an amazing mastery of foreign languages, his unorthodox views on bone formation and on the origin of congenital deformities became known far and wide. Through his regular visits to other countries, Jansen acquired a circle of devoted friends who were attracted both by his powerful intellect and by his innate charm and culture. Amongst his earliest friends in this country were Prof. (now Sir Grafton) Elliot Smith and the late Sir William Thorburn, of Manchester. Later he came under the spell of Sir Robert Jones, which ripened into affection. During the war, when a considerable

number of British wounded became interned in Holland, the Dutch Government applied to our War Office for the services of an orthopædic surgeon. This request was passed on to Jones, who had the pleasure of informing the Dutch Government there was in practice at Leiden one of the most distinguished of living orthopædic surgeons. For his services to our wounded Jansen was awarded the O.B.E. In his earlier efforts to get recognition for orthopædic surgery as an autonomous specialty in the Dutch medical schools Jansen met with strenuous opposition. But he was by nature an uncompromising fighter in any cause in which he believed, and he refused to bow. In 1920 he founded in Leyden the Society for the Deformed, and in 1928 he gave half his private fortune to build and equip a hospital of 60 beds, known as the Anna Kliniek. Before his death Jansen had the satisfaction of knowing that this hospital had been recognised as the *official* teaching clinic in orthopædic surgery of the University of Leyden. In the same year the Dutch Government conferred upon him the honour of the Knighthood of the Lion. In 1933, on the death of Sir Robert Jones, Jansen succeeded him as president of the International Society of Orthopædic Surgery. The generous hospitality of Jansen and his wife on the occasion of the meeting of the British Orthopædic Association at Leyden last year will be long remembered.

NASCITUR RIDICULUS MUS

THE name of Mickey Mouse drew large and excited crowds to the Royal Society of Medicine last week, and it was once more evident that the medical profession and its wives are only human after all. To serious workers, perhaps, a first disappointment was the discovery that Mr. Robb Lawson, though billed to speak on the anatomy and embryology of the said mouse, was neither anatomist nor embryologist: we were to get no erudite satire on methods current in these sciences. By way of compensation came an illustrated account of Walt Disney's studio technique, and four marvellous films—two Silly Symphonies and two Mice. Mr. Lawson tried to find a sociotherapeutic purpose in these impossible creations, and Dr. Robert Hutchison, in introducing him, compared Mickey to the celebrated Dr. Merryman. It would have been no exaggeration that evening, however, to speak of him as Dr. Riot;[1] for certainly (as he said later) the Barnes Hall has never resounded to such mirth; and we fear the next distinguished lecturer there—even if he provides himself with fly-papers—must expect to fall a little flat after Playful Pluto. As for the embryological aspect, Mr. Lawson kept just enough back to prevent any of us setting up immediately in opposition to United Artists. His audience learnt all about the need for team-work and the troubles of musical directors; they heard about the three kinds of artists and the functions of those who merely copy with a difference; and they were brought to realise the necessity of thinking up plenty of good gags. It was divulged that all the mobile figures are drawn on transparent sheets placed one above the other; they are then photographed and changed where necessary, the background remaining the same; and all this involves some 10,000 exposures for a short film. The truth is that the photography and everything else takes so long that it really seems best to leave the business in the hands of those who like doing that sort of thing. Meanwhile, it is comforting to learn that medical practice is not the only occupation in which success depends on collaboration. No doubt the journals of the Mickey Mouse industry, like those of medicine, constantly contain moving appeals for closer coöperation between the artist, the animator, the artist-animator, and the odd-job man.

A "CAUSE" OF EPILEPSY

SIEVEKING is credited with the statement that there is no substance that can pass down the gullet of man that has not at one time or another been considered a specific for epilepsy. The list of alleged causes of this disorder may not be quite so comprehensive as the list of cures, but its diversity is about as great; and most of the items on it would be better defined not as causes but as factors in the determination of attacks in potential epileptics. And now we have Dr. Pagniez with a convincing account of a brand new one.[1] After a fall on the head a boy had a few typical epileptic fits, followed by several years' freedom. He then began to get attacks of giddiness, headache, and nausea, the nature of which was made clear by the occurrence of a typical major attack of epilepsy. Rigorous examination disclosed nothing abnormal in the nervous system or elsewhere, and dietetic factors were investigated and excluded. After long months of medicinal treatment, which produced amelioration but not cure, the patient one day called Pagniez's attention to his wrist-watch and other silver articles which were always turning black. A search for abnormal sulphur absorption from the alimentary canal was fruitless, but eventually it turned out that the patient had been for some time using a sulphur lotion on his head to prevent his hair falling out. The lotion was promptly stopped; the silver articles ceased to tarnish; and the epileptic manifestations disappeared. It is difficult to doubt the cause and effect suggested in this story, but it is important to recognise that here was a potential epileptic of a high degree of potentiality. At one time a blow on the head, insufficient to cause loss of consciousness or bony damage, determined fits; at another, sulphur absorption through the skin. Very possibly some other effective stimulus may be found for him later on. Still, as it stands, the moral of the story is, as Pagniez points out, that where epilepsy does not respond to ordinary methods of treatment, an inquisitorial and exhaustive survey is called for to exclude any possible determining factor.

Dr. Robert Forbes has been appointed secretary of the Medical Defence Union.

AT a meeting of the Royal College of Physicians of London on April 15th, Lord Dawson of Penn was re-elected president.

INSURANCE doctors and chemists regain their standard remuneration on July 1st, when, under Mr. Chamberlain's fourth Budget, the remaining half of the salary cuts of 1931 is restored.

PASSMORE EDWARDS HOSPITAL.—Lord Inverforth has promised £25,000 towards the proposed new building of this hospital which is to cost at least £50,000. The old buildingis very inconvenient, and parts of it are becoming very shaky. The patients received during the past year numbered 1815, which is about the same as in the previous year, and the patients admitted showed a slight decrease.

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[1] Of Messrs. Quiet, Diet and Riot.

[1] Bull. Soc. méd. hôp. de Paris, March 8th, 1935, p. 444.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XLVIII.—PROGNOSIS IN THE SEXUAL NEUROSES

THE difficulty in dealing with this subject is that in the first place there is a certain ambiguity in terminology which makes it necessary to define what we mean by the sexual neuroses; and in the second place there is no one accepted method of treatment for these conditions which enables one easily to assess the results of treatment, and therefore the prognosis. At the same time there is no doubt of the importance of being able to form some judgment on prognosis, since the sexual disorders are, fortunately, in these days being reported to us, as doctors, much more often than they were to our predecessors.

Definition.—It is probable that some would limit rather strictly the number of disorders which could be included under the heading of "sexual neuroses." Prolonged masturbation, impotence, vaginismus, seminal emissions accompanied by anxiety, may be held to be truly neuroses. On the other hand, most medical men, for their own convenience of thought, include under this heading a number of other conditions, notably sexual obsessions, homosexuality, fetichism, sadism, masochism and exhibitionism. In this brief attempt to assess the prognosis, this latter standpoint is taken, and all these conditions, which result either from old emotional conflicts or from warping of the personality in early life, are included. In any consideration of the problem it must be remembered that in fact the sexual neuroses are hardly an entity in themselves. The problem of their prognosis is really that of the psychoneurotic states in general. The majority of these disorders of the sexual life are merely symptomatic of a more general emotional disturbance, and it would almost be a parallel if we were to speak of the prognosis of headache, or any other symptom which may come from one of a number of causes.

Factors affecting prognosis.—There are certain important factors which affect the prognosis in these conditions: age, duration of the symptoms, intelligence of the patient, the degree of desire for cure or for change which the patient experiences, and his social situation, must all be borne in mind as influencing the course of his illness. The severity of the coincident psychoneurotic symptoms may also play an important part in affecting the chances of a recovery under treatment.

The patient who has a philosophy of life, or an ideal which makes him wish for cure, has certainly an advantage over his more hedonistic fellow. It is well known that the homosexual patient, for example, often has no wish to be other than he is, and consequently is never likely to be so. The results of the psychotherapeutic treatment of sexual offenders who are referred from the courts are often very much more disappointing than they are in similar persons who have come of their own free will. It is nowadays a truism to say that all punishment should be treatment, but the converse also holds and occasionally treatment will be regarded as a part of punishment, and therefore resented. Environmental factors will influence the prognosis perhaps more than in any physical disorder. Social conditions are inevitably linked with all these problems of sex. As an example, it is clear that the man who suffers from impotence will find the task of readjustment much more difficult if his wife is unsympathetic or very demanding or querulous. Those who have worked with homosexual patients under ordinary consulting room or hospital conditions, and have also worked with those who are in the process of serving a sentence in prison, will realise that there is a very considerable difference produced by the conditions of prison life and by the general attitude that is likely to be adopted there towards the patient's neurosis.

In the process of weighing up the different factors which affect prognosis one must not be unduly influenced by any one. An intelligent person of 70 who has had a neurosis with a sexual basis for, say, 20 years may get perfectly well. Homosexuality of very long standing may be cleared up sometimes almost as quickly as this condition in the callow, immature youth. Our preliminary judgment on the matter of prognosis, therefore, is only to be arrived at by taking all of the factors into consideration.

TWO GROUPS

It is possible for prognostic purposes to divide the various conditions roughly into two groups. In the *first group* the conditions are, on the whole, less serious and more susceptible of cure by comparatively simple treatment. In this group I would put masturbation, emotional (non-active) homosexuality, many cases of vaginismus, all cases of psychological impotence, mild obsessional states and conditions of seminal emissions with anxiety. All of these are conditions of which, as a rule, the patient wishes to be rid. Few of the patients will need any very serious course of deep analysis, and in all of them one may say that the prognosis is very good provided that the conditions are treated as psychological problems.

Into the *second group* I would put conditions such as active homosexuality; fetichisms (where the sexual impulse has been transferred to some object which is normally non-sexual); transvestitism (the wearing of clothes of the opposite sex); masochism (the achievement of sexual gratification through self-abasement), its converse sadism, and exhibitionism. In these conditions the prognosis is more doubtful. On the whole the patient is not so anxious to be rid of his symptoms, at any rate he is not prepared to pay the price for such a relief in so far as it means giving up pleasure, excitement, and convenience. All the disorders in this group are very deep-seated and their origins usually have to be sought in conflicts and personality problems of the first years of life. For all of them nothing but reductive mental analysis, of which Freudian psycho-analysis is the best-known technique, will be adequate. Without such treatment the victims are very unlikely to recover. Practically all of the patients in this second group can be *helped* by any one with tolerance, commonsense, and some understanding. Every one of them can be helped and improved by psychotherapy, and it is quite certain that a high proportion of them can be, and are, cured permanently by analytical treatment. No psychotherapist or analyst would, however, be so rash as to give a completely optimistic prognosis without some considerable knowledge of the patient.

There is no available evidence as to the course taken by these illnesses in the past, when certainly there were no psychotherapeutic procedures to apply. Such experience as can be obtained from the observation from time to time of cases which receive no treatment, makes it seem that they are unlikely, on the whole, to right themselves. It is, of course, obvious that some of the simplest conditions like masturbation and simple homosexuality may be "grown out of."

METHODS OF TREATMENT

A change in the general circumstances of the patient which gives him fresh interest and perhaps relieves the strain of his life may, of course, tend towards an alteration for the better in his sexual interests. It is, however, in practically every case an unwise and superficial piece of advice to tell patients to get married or to find other sexual outlets. It is a "hit or miss" method and the failures dwarf the successes. It is also of very little use to give stimulating advice to people to pull themselves together and be normal unless we can tell them how to do it. It can only do harm to create a guilt sense in a patient, or to pour scorn or contempt on him for the particular form of his illness, however antisocial it may be. We as a profession, while well equipped with knowledge of the anatomical and physiological mechanisms of sex, have little knowledge of the functioning of sexuality, save what we acquire for ourselves after graduation. It is just that knowledge and understanding of personality and of psychopathological reactions which can prove effective in dealing with sexual difficulties. Given sufficiently early treatment, which involves insight, knowledge, and tolerance, there is little doubt that the deviations of sexual life could be averted or dealt with before they ever became serious.

Once a sexual neurosis or perversion is established, the prognosis depends mainly on the efficacy of the psychological treatment that is given. Suggestion is a method which is not very radical. It may be of use in a few cases of impotence, or with other recently developed symptoms, but it is unlikely to do anything effective for the more established disorders. Education, or re-education, in matters of the simpler mental mechanisms and on the whole subject of sex is of the greatest value to all these patients. Most of those who seek medical help fall into the first of the two groups suggested above, and are helped mainly by a combination of superficial analysis with re-education. The smaller and more serious group need prolonged, detailed investigation if there is to be any chance of permanent cure.

CONCLUSION

The figures of the follow-up of patients at the Institute of Medical Psychology show that some 69 per cent. of the whole group of psychoneurotics are "greatly improved" or "considerably improved," and remain so. The results in the sexual disorders—i.e., in those conditions where the primary complaint is of some sexual difficulty—show a slightly better figure; about 76 per cent. of them appear to be permanently benefited.

In conclusion, therefore, we are certainly entitled to the belief that prognosis in the majority of the sexual disorders is good, if we exclude mental defectives, and if suitable treatment is available. We are certainly justified in encouraging such patients in the belief that, with help, they can achieve freedom from their symptoms and normality in their sexual life.

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SPECIAL ARTICLES

MINOR EPIDEMICS OF "INFLUENZA"

(EPIDEMIC CATARRH)

A CLINICAL STUDY OF NINE SEASONS, 1924–33

BY G. M. WAUCHOPE, M.D., M.R.C.P. Lond.
ASSISTANT PHYSICIAN TO THE NEW SUSSEX HOSPITAL, BRIGHTON

(*Concluded from p. 881*)

Character of Individual Epidemics

IN considering each year's epidemic as an entity, one recognises that each had its special character or variation. They fall conveniently into three groups :—

(1) Mild.—1925–26, 1927–28, 1929–30.
(2) Moderate.—1928–29, 1930–31, 1931–32.
(3) Severe.—1924–25, 1926–27, 1932–33.

This grouping corresponds partially with the European epidemics given by D. and R. Thomson.[5] Thus 1926–27 and 1928–29 were the most severe generally. The former was the worst of all the local outbreaks, but the latter was in the moderate group. In the locally mild years there were no general epidemics.

MILD EPIDEMICS
(1925–26, 1927–28, 1929–30)

The first group (mild) comprises 63 cases. Reference to the charts of incidence show that in these years the cases were few in number in addition to being mild in character, yet infection spread quickly among members of a household. Disability was of short duration, 80 per cent. of the patients were well in under a fortnight; only 4, who had complications, were ill for more than three weeks. The illness differed in each year of the group.

1925–26 was characterised by nasal catarrh with persistent intractable cough; headache and pains in the limbs were common; in addition to a few cases with definite alimentary symptoms intense nausea was a troublesome symptom.

In 1927–28 sore-throat was the main distinguishing symptom, and although fever was high, recovery was rapid. There were no non-respiratory cases.

In 1929–30 cold in the head and pains in the limbs were part of a very mild illness but it was associated with a rather larger proportion than usual of cases of slight bronchitis.

EPIDEMICS OF MODERATE SEVERITY
(1928–29, 1930–31, 1931–32)

There were 267 cases in this second group. As the charts of incidence show, the illness was fairly extensive, spreading over several weeks. As a whole it was respiratory and of short duration. 47 per cent. of the patients recovered in a week and 34 per cent. in a fortnight. A few cases in each year lingered on into months. Otitis media was the outstanding complication; 23 of the total 35 cases occurred in the three years forming the group, and each year had more cases than any other single year. Other complications were few, except for 35 cases of bronchitis; influenzal cardiac debility occurred in three cases, two in 1928–29 and one in 1930–31; there was one case of rheumatic carditis after tonsillitis on the tenth day of influenza and one of pneumonia in 1930–31.

Each year had its distinguishing character.

1928–29 was the most severe of the three and the incidence reached a sharp peak in the last week of February

(Chart V.). The symptoms were: intense nasal catarrh with streaming eyes and nose, paroxysmal sneezing, epistaxis, noises in the ears, deafness, and shivering. Cough was hard and racking but of short duration. In 9 cases the signs of respiratory catarrh did not appear till the third or fourth day; the patients were first ill with headache and fever, coated tongue, and nausea; one had epistaxis, one epigastric pain, and two pains in the limbs.

1930–31 was the only year in which afebrile cases occurred; neuromuscular pains were frequent and giddiness was a characteristic symptom. Both the respiratory symptoms and the otitis media were milder than in the previous year.

1931–32 was characterised by a comparatively large number of gastro-intestinal cases; 11·5 per cent. were purely alimentary and 31 per cent. in all had gastrointestinal symptoms; the sickness and diarrhœa were unusually violent. Three patients suffered from prostration and post-influenzal debility which did not occur in any other year of the group.

SEVERE EPIDEMICS

The third group (252 cases) was characterised by a high peak of incidence, severe and dangerous complications and prolonged disability. Ten patients were laid up for over three months as compared with two in the moderate group, whilst 30 were ill between one and three months, compared with 11 in the moderate group. The dangerous complications were first, the so-called toxic myocarditis—10 of the total 14 cases occurred in this group and 7 in one year (1924–25); and secondly, pneumonia, 5 cases with 2 deaths. Bronchitis (24 cases) and otitis media (12 cases) were less frequent than in the moderate group and not more severe. Even in these years, however, the majority of cases were of the usual respiratory type; 37 per cent. of the patients recovered in a week and 30·6 per cent. in a fortnight.

1924–25

This year has been included under Group III. because the heart was affected in 9 per cent. of the cases and the average duration of the illness was greater than in any other year. The chart of incidence (Chart I.) does not show a sharp "peak" but rather a broad "mountain" resembling the moderate years. The cold in the head was extremely severe with paroxysmal sneezing and was associated with sore-throat or gastro-intestinal symptoms in many cases; cough was troublesome but "looser" than the typical influenza cough. Delay in the onset of catarrhal symptoms occurred as in 1928–29 and chiefly in the worst cases. Neuromuscular symptoms were common and prostration was marked, either at the beginning of the illness or in later stages, and the year is particularly remembered for the severe cardiac debility which supervened in certain cases.

1926–27

This was by far the worst epidemic of the series both in the severity of the symptoms and the sudden rise in the number of cases within a short period at the end of January. In fourteen households more than one person was affected accounting for 41 of the 86 cases, or nearly 50 per cent. The character of the illness seemed worse in houses where there were several cases; for instance, four children in one family had high fever and two had otitis media with perforation of the drum; another family of four children were severely ill, one had otitis media, and another consolidation of the apex of one lung; and in a household where five were attacked, two had pneumonia, and one of these died; two others were laid up for long periods and only one had an uncomplicated attack. This was the only epidemic in the series during which doctors kept the latch-keys of the patients' houses, there being no one to let them in.

In 71 (82 per cent.) cases the respiratory tract was the main site of infection, and although the cold in the head, &c., was not so severe as in other epidemics, the general condition was worse. A larger proportion than usual (11, or 12·8 per cent.) were cases of "pure" neuromuscular type, and these were the patients who were the most severely ill and in whom the serious complications such as pneumonia supervened.

Prostration was the feature that distinguished this epidemic from the others in the series; it was very severe in 11 of the non-respiratory cases and in an equal number, but smaller percentage, of the respiratory cases (83 per cent. and 15 per cent. respectively). Delirium occurred in 7 of the uncomplicated cases. This was unusual in the other epidemics and is another sign of a more severe disturbance. The temperature was higher and more prolonged than in the other epidemics. The length of time taken to recover and the two deaths emphasise further the serious nature of the illness. The deaths were both due to influenzal pneumonia, which occurred in three cases. These have already been briefly described.

1932–33

This epidemic was second in severity to that of 1926–27; prostration was marked, recovery was delayed, and two patients died. Chart IX. shows that although the number of cases recorded was almost the same as in the previous "moderate" year, there was a "peak" of incidence in the last week in January in 1933, whereas in 1931–32 the main incidence was spread over several weeks.

The symptoms were chiefly respiratory but were associated in 25 cases with headache and pain in the limbs and in 7 with nausea and vomiting. Two patients complained of pains in the bones of the face, nose, and forehead. Prostration occurred in 19 of the more severe cases, but in contrast to 1927 not especially in the non-respiratory type. The character also was rather different from the prostration of 1926–27 where the patients looked poisoned; in 1933 they appeared to be deprived of vitality for no obvious cause; they felt as though they were dying and could hardly be persuaded that there were no physical grounds for so gloomy an outlook. For example, a woman of 56 lay for weeks with a systolic blood pressure varying between 90 and 100 mm. Hg, and a pulse-rate of 100 per minute. She experienced intense nausea and depression, and it seemed almost a hopeless task to instil even a wish to live.

In this year, alone of the series, all the common complications occurred in a few cases. The two deaths were not exclusively the result of influenza. The first patient, aged 70, was dying of obstructive jaundice and, contracting influenza from others in the house, quickly developed a fatal bronchitis; the other was a woman of 60 who nursed other patients and was over-tired. On Feb. 17th a cold in the head began; on the 19th she had a shivering attack after being out in the rain. The temperature rose to 103° F. with a streaming cold and diarrhœa; she was desperately ill with all the appearance of septicæmia when first seen on the 21st; she had a septic corn on the right foot and developed a red, shiny swelling on the right foot and hand. She died on the seventh day, the temperature reaching 106° F. before death. As no blood culture was made it is not possible to know how far septicæmia from the right foot was responsible for death; but certainly the onset was influenzal.

Discussion

In reviewing the nine epidemics here described, several questions arise.

(1) *Was the illness influenza?*—While there is no agreement as to the relation between pandemic influenza and the "influenza" of inter-pandemic years,[5] it may be noted that although the symptoms are very much the same in both the great and the lesser epidemics, the former are seen only once in a generation and the latter almost annually. One possible explanation of this is that influenza vera (pandemic influenza) confers immunity; and the age-incidence in the last pandemics supports this, for in 1889–90 middle-aged and old people were attacked, while in 1918 those who had passed through the earlier epidemic escaped, but the young were decimated. In this respect influenza vera conforms with the known virus diseases, all of which confer permanent immunity (for example, acute poliomyelitis).

The "influenza" in the present series, on the other hand, conferred only temporary immunity. Reference to the charts of incidence shows that relatively severe epidemics occurred only in alternate years, and that in the intervening years there were very few cases; 1931–32 was an exception. In individual cases an attack seemed to render the patient more susceptible. (See under "Length of Illness.")

Therefore, although the similarity of the symptomatology supports the view that the annual or biennial epidemics are milder forms of the great pandemics and present individual cases which cannot be distinguished —for example, even the toxic cases of 1918 were imitated in 1927—yet the evidence of immunity seems to separate them. The question awaits bacteriological proof, and the symbiotic theory emphasised by D. and R. Thomson [5] offers a promising solution, viz., that pandemic influenza is a virus disease [5] and that there may be a heavy infection with *B. influenzæ*, pneumococci, or streptococci at the very beginning of the disease—i.e., too soon to be regarded as a secondary infection; that the bacteria and the virus increase each other's virulence causing severe pandemic influenza; that the concomitant bacteria are pathogenic and may cause primary infections of the respiratory tract without the aid of the virus" (inter-pandemic influenza). They point out that the bacterial infections are more common in the winter, and that the first wave of the 1918 epidemic occurred in the summer and was mild; the second wave came in October–November when the bacterial respiratory diseases were beginning and had a great mortality, the inference being that the first wave was a pure virus influenza, and the second wave due to symbiotic virus and bacterial infection.

(2) *Were the nine epidemics all the same illness?*—They had certain characters in common. For example, the sudden onset, the fever, the catarrhal symptoms, and the comparatively short duration; certainly the respiratory type of illness which was the foundation and background of each epidemic was much the same every year, though differences were found in the severity of the symptoms and the part of the respiratory tract which was chiefly affected, the nasal passages, the throat, and the trachea bearing the brunt in turn. And yet each year's illness had its distinguishing characteristic, so that even when patients had several attacks their illness followed the prevailing type and was not peculiar to the individual as a cold in the head usually is.

The differences were made more conspicuous by the non-respiratory cases, by the presence or absence of prostration, and by the nature of the complications.

(3) This leads to a third question: *Are the alimentary and neuromuscular forms due to the same infection as the respiratory type?*

(*a*) It is often denied by surgeons and consulting physicians that "gastric influenza" exists; they believe that the cases so diagnosed are really appendicitis or cholecystitis. But most of those who have observed epidemics of influenza recognise it.[5] and in the present series both respiratory and alimentary cases were seen in one household while individual cases combined respiratory catarrh with gastro-enteritis; and further, it is hardly to be supposed that in one practice 27 cases of appendicitis or cholecystitis occurred and subsided spontaneously in the course of a few weeks (1931–32). (*b*) The neuromuscular type is not so suspect because aching head and limbs are recognised as part of "influenza" and it is not difficult to accept a form of the illness in which they occur without respiratory catarrh.

It is almost impossible to draw a line between any of the respiratory epidemics and to say that one was and another was not "influenza," and if the identity of the respiratory type is accepted there are two possible answers to question (3).

(i) The respiratory tract, comprising the nose, pharynx, trachea, and bronchi, is the normal site, the severity and actual point of attack being variable; the gastro-intestinal tract and neuromuscular system are also vulnerable, though in a lesser degree by the same virus. The illness in all the epidemics is therefore the same and the non-respiratory forms are variations.

(ii) The non-respiratory type of illness is determined by a secondary or symbiotic infection, and is a complication of "influenza."

The first is the more probable on clinical grounds.

(4) The fourth question concerns complications and may be thus stated: *Which of the concomitants of respiratory influenza are true complications?*

Bronchitis occurred every year and was probably an extension of the "influenzal" respiratory infection, but pneumonia and otitis media only in certain years. Glover [3] points out that these two complications are secondary epidemics and may or may not occur. They are almost certainly due to a supervening or symbiotic infection. Cardiac debility, on the other hand, appears to be a consequence of the influenza alone, and may be a true "variation" like the gastro-intestinal and neuromuscular manifestations, or may bear the same kind of relation as diphtheritic cardiac toxæmia bears to the Klebs-Löffler infection. It certainly occurs in the more severe epidemics and in patients who appear "toxic." Prostration usually appears earlier in the course of the illness than recognisable cardiac weakness. Sometimes it marks the actual onset. The only explanation seems to be an overwhelming toxæmia.

To sum up the position, so far as it can be ascertained on clinical grounds alone, the complications, or supervening secondary lesions, occurring in these epidemics were (*a*) pneumonia, "toxic" or streptococcal and lobar; (*b*) otitis media; and (*c*) the sporadic complications already enumerated. Bronchitis was an extension of the original infection and was similar to gastro-enteritis and the neuromuscular manifestations. Cardiac debility and prostration were either extensions of the original infection to the heart and nervous system—and it is to be noted that prostration was more common to the neuromuscular cases—or were due to "toxæmia."

TREATMENT

No mention has been made of treatment, because the object of this study has been to depict the character of the illness as it occurred from year to year; the treatment was symptomatic and certainly did not influence the type of the illness; it is doubtful if it altered the course and the complications. Mixed vaccines from pneumonic sputum were given in large doses to a few patients in 1927 but only in the worst cases, and there were not enough controls to assess their value.

Prophylactic vaccines have been given to many patients with satisfactory results, but in so far as they were effective in preventing influenza the cases are necessarily excluded from this survey, and there is no evidence that the illness was modified.

Summary

Nine minor epidemics of "influenza" have been described and illustrated by charts of incidence. Clinically the illness occurred in three forms—respiratory, alimentary, and neuromuscular. It has

been shown that in these epidemics, although the main type was respiratory and was more or less similar from year to year, each season's illness showed individual variations in incidence, severity, complications, and in aberrant types. The relation of these catarrhal epidemics to true influenza has been discussed and the ætiology of variations and complications.

It is a pleasure to thank Dr. Robert Hutchison for his helpful criticism.

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UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

HEALTH INSURANCE AGAIN

A SPECIAL session of the house of delegates of the American Medical Association, called at the request of the board of trustees, met in Chicago on Feb. 15th and 16th and passed this resolution:

> The house of delegates of the American Medical Association reaffirms its opposition to all forms of compulsory sickness insurance whether administered by the federal government, the governments of individual States or any individual industry, community, or similar body. It reaffirms also its encouragement of local medical organisations to establish plans for the provision of adequate medical service for all the people, adjusted to present economic conditions, by voluntary budgeting to meet the costs of illness.

Concerning which the *Survey* remarks that beneath the rather heated language there lies a shift that is rather surprising. "The Association's stand," they add, "for voluntary 'budgeting' plans under the direction of local medical organisations strongly resembles recommendations of the Committee on the Costs of Medical Care which the Association dubbed socialism and communism when they were made a little more than two years ago."

Since the meeting of the house of delegates the important State medical society of California, at a meeting of its house of delegates on March 3rd, has adopted a resolution frankly favouring the compulsory health insurance. It recommends legislation "to establish a health insurance system, mandatory as to certain population groups and voluntary as to certain population groups, which shall include the following principles: (1) The patient shall have absolutely free choice of physician and hospital. (2) The medical profession shall determine the scope, extent, standards, quality, compensation paid for, and all other matters and things related to, the medical and medical auxiliary services rendered under the system. (3) There shall be no provision for cash benefits. (4) The patient shall receive adequate treatment and his physician shall receive adequate compensation."

RURAL PUBLIC HEALTH SERVICE

A very large part of the rural population in this country has never enjoyed the advantage of public health service by full-time (even though untrained) health officers. For years the effort of the Foundations and the U.S. Public Health Service has been to persuade county administrations to employ a "full-time unit"—i.e., at least one public health officer and one public health nurse. The depression has naturally arrested progress in this direction. A compromise with this ideal appeared when certain States began to encourage the formation of districts by legislation permitting two or more counties to pool their resources for the employment of full-time health officers. Two such districts have just been opened in Michigan, each of them comprising three counties. Michigan will now have 38 out of its 83 counties under full-time service. The Ellis Health Law adopted by Georgia a year or so ago makes provision for this same type of district administration. But in both of these States the provision for districts is permissive and not mandatory. The New Mexico legislature of 1935 has gone a step farther in dividing the entire State into 10 health districts and providing that each shall be under the supervision of a full-time health officer. At the same time they have amended the former law so that a levy of one mill (one dollar in each 1000 dollars of assessed property value) is made mandatory in each of the 31 counties and the proceeds go into the county health fund which can only be expended on vouchers signed by the district health officer. Each county will thus have at least one full-time public health nurse, and if some federal aid is granted on the basis of the Security Bill now pending in Congress, each county will have a clerk and a sanitarian (sanitary inspector) as well. The new law has the effect of removing local health work from the domain of political patronage and creates conditions which will encourage health officers to take post-graduate study in public health as an opening to a career.

MATERNAL MORTALITY

In spite of repeated unfavourable comparisons between the maternal mortality of this country and European States, and in spite of various local studies which show that a large number of maternal deaths are preventable, there have always been those who took comfort in the argument that maternal mortality-rates as between one nation and another are not comparable. American statistical practice, it was argued, attributed to "puerperal causes" a number of deaths which in other countries are differently assigned. The complacency of these medical patriots will be rudely shaken by a study made by Dr. Elizabeth Tandy,[1] which has already received some notice in your columns (March 30th, p. 758). Duplicates of 1073 actual death certificates obtained from the U.S. Census Bureau were furnished to 16 countries abroad, and the proper statistical officers classified them according to the procedure in force in each country. The methods of assignment in Australia, Netherlands, New Zealand, and Scotland are similar to our own: their rates are comparable with ours. Under the procedure of Denmark our rates would be significantly higher than those published. Under the procedures of Canada, Chili, Czechoslovakia, England and Wales, Estonia, France, Irish Free State, Italy, Northern Ireland, Norway, and Sweden, the rates of the U.S.A. would be somewhat lower. But it is found that the difference is small, and our relative position remains high under all circumstances.

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[1] Tandy, Elizabeth C.: Comparability of Maternal Mortality Rates in the United States and Certain Foreign Countries: a Study of the Effects of Variations in Assignment Procedures, Definitions of Live Births, and Completeness of Birth Registration. Government Printing Office, Washington D.C. Pp. 24. 5 cents.

Even if the method assigning the smallest number of deaths to puerperal causes is applied to our death certificates the United States rates would still exceed those of all countries except Australia, Canada, Chili, and Scotland. It is now indisputable that "the United States retains an exceedingly high rate as compared with other countries."

PARIS

(FROM OUR OWN CORRESPONDENT)

UNDULANT FEVER IN FRANCE

SOME years ago Prof. Nicolle described undulant fever as a disease of the future. It was not recognised in France until 1909, but by the autumn of 1932, when the Mediterranean Hygiene Congress was held in Marseilles, an official circular put the annual total at the imposing figure of 3000 cases. Next June the brucellar infections are to have a congress all to themselves—the Premier Congrès des Brucelloses—at Avignon.

There seems to be no doubt that undulant fever is spreading, in more senses than one. Geographically, it has now extended from the Mediterranean littoral up the Rhone and to the Pyrenees and Alps. And not only are the numbers of human and animal cases growing in the infected areas, but cattle as well as goats and sheep are becoming reservoirs of the disease. In 1930 a research centre was established at Montpellier on the initiative of the Bertrand Bouisson Institute and the Rockefeller Foundation, and according to a report on its activities by Dr. R. M. Taylor, Dr. M. Lisbonne, and Dr. L. F. Vidal, in the February number of the *Mouvement Sanitaire*, it should be possible to reduce the number of human cases in which infection is due to the consumption of milk and its products and not to contact with infected animals. The boiling or pasteurisation of milk, before it is consumed as such or converted into cheese, is most certainly desirable and should not prove difficult, but the problem of protecting human beings in contact with infected animals is much less easy to solve. In theory, careful washing and disinfection of the hands after every dangerous contact should prove effective, but at the present time the unsanitary condition under which human beings and animals live together in the south of France are very discouraging to the public health reformer. As for the action of vaccines hitherto prepared, the experience of the Montpellier centre with regard to both human beings and animals is not particularly promising, the immunity acquired by vaccination having so far proved comparatively feeble. It is, however, recommended that the vaccination of human beings be continued among rural populations which are less exposed to massive infections than are the laboratory workers whose reaction to such vaccination has been studied at Montpellier. The ideal solution would, of course, be vaccination of animals which protected them against not only abortion, but also infection. No reliable vaccine for this purpose has yet been prepared; the employment of such living vaccines for cattle is not without its dangers, and the authors have observed two cases of undulant fever due to *Br. abortus*, the source of which can almost certainly be traced to the handling of a vaccine destined for cattle. The alternative of a sanitary cordon around the areas already infected should be feasible. As far as the health of human beings is concerned, it is infection with *Br. melitensis* which must be combated by measures destined to keep the disease within its present geographical limits.

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

A MEDICAL CONSTITUTION

THE long disputes over the regulation of the medical profession have entered a new phase with a Bill now before the National Assembly. On a regional basis the profession will be divided into chambers having between 100 and 1000 members: there will be three in Budapest. Among other things these chambers are to regulate the minimum fees for medical work and establish benevolent funds. Each will send on two members to the national medical chamber which will make regulations about professional discipline and ethics and will also found various welfare institutions. The disciplinary offences include negligence, unprofessional conduct—that is to say, violation of the authority of the medical order or vocation by unsuitable behaviour or an anti-national attitude—and failure to pay fees to the chamber for two years. The punishments include reprimand, fines of 10 to 1000 pengős (12*s.* to £60), and temporary or permanent suspension from practice. A doctor may also be suspended from practice if an action is brought against him in a criminal court.

The Hungarian medical profession in general has received the news of its new constitution with cool indifference, though a group are protesting because they consider that the disciplinary rules are too severe and the advantages offered meagre. They particularly object to the rule suspending a doctor against whom a criminal case is pending, for he may well prove to be innocent. They also consider that in the present plight of the medical profession, in which, as I related in your issue of March 30th, at least a third of our private practitioners cannot earn even a very modest livelihood, it is not fair that non-payment of chamber fees for two years should lead to cancellation of membership—which is equivalent to removal from the medical register.

ADVERTISEMENT OF PHARMACEUTICAL PREPARATIONS

According to the new Bill drugs and chemicals which are included on the list of official drugs, and which must therefore be included in the stock of every pharmacist, even those in the most remote villages, may not be advertised in lay journals, on posters, or in leaflets which are distributed to the public, but they may be freely advertised in professional journals. Articles describing the use of new drugs and new methods may not be published, and interviews to the lay press on drugs which are still being used experimentally should not be granted. A new preparation may be described once, on its introduction, and then only by a medical man in a professional journal. Where a discovery is very important, however, it is permissible for directors of reputable clinics to make statements to the lay press in general terms and with the object of correcting erroneous or sensational inferences. In these circumstances names must not be mentioned.

A DERMATOLOGICAL CONGRESS

Though it is to be regretted that the present financial depression has not yet permitted the formation of an international dermatological association, the delay will make more memorable the ninth international congress which is being held in Budapest from Sept. 10th to 21st. Renewed efforts are to be made at it to form an association, and a number of important committees are meeting to consider technical, administrative, social, and professional aspects of dermatology on the two days preceding the scientific meeting. They will discuss the reform of dermatological terminology (chairman, Prof. J. H. Rille of Leipzig); the classification of skin diseases (chairman, Prof. Howard Fox of New York); the teaching of dermatology (chairman, Prof. H. Gougerot of Paris); the foundation of an international dermato-venelogical scientific exchange centre (chairman Dr. Tomnasi of Palermo); and dermato-venereological medical practice (chairman, Sir Ernest Graham-Little of London). On these subjects they will submit reports and proposals to the final session of the Congress. The official languages of the congress are English, French, Italian, and German, and the English secretary is Dr. A. M. H. Gray, 69, Harley-street, London, W.1.

AN ACCIDENT WITH THALLIUM

A terrible example of inaccurate prescription-writing has lately been before us. A professor in the agricultural high school in Czegléd consulted Dr. X., a lecturer in the University of Budapest, for a fungoid scalp disease of his nine-year-old twin sons. Dr. X. prescribed thallium acetate to bring about depilation, but instead of 0·5 g. he wrote 5·0 g., with the signature: "To the hands of the physician." The pharmacist saw that the prescribed dose was far above the maximum but assumed from the signature that the remedy (which was new to him) would be used externally. Accordingly he put up the powder, as prescribed by the Hungarian pharmaceutical law, in a hexagonal bottle; that meant that it was intended only for external use. Dr. X. himself administered the drug to the children and they both died, after sufferings lasting five days. The police demanded an autopsy and this revealed that the cause of death was overdose of thallium. Although this drug is not official yet in Hungary, it nevertheless appears in the new list and its maximum dose is given as 8 mg. per kg. of body-weight. As the children weighed 30 kg., each should have been given 24 cg.—that is to say, about 0·5 g. was required for the two. Dr. X. had previously administered thallium successfully in 344 cases, but that did not save him from disastrous error.

GRANTHAM HOSPITAL.—The new extension has been finished and the patients and staff have moved in. The old building is now being modernised, and when the work is finished the institution will have 100 beds. The official opening is to be in June.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Forthcoming courses include dermatology at St. John's Hospital, Leicester-square (April 29th to June 2nd); medicine, surgery, and gynæcology at Royal Waterloo Hospital (April 29th to May 11th); thoracic surgery at the Brompton Hospital (May 13th to 18th); chest diseases at the Brompton Hospital (two afternoons weekly, from 5 to 6.30, in June); chest and heart diseases at the Victoria Park Hospital (two afternoons weekly, 6 to 7.30, during June); clinical and pathological course at the National Temperance Hospital (Tuesdays and Thursdays, June 11th to 27th) 8 P.M.); week-end courses will be given as follows: cardiology at the Victoria Park Hospital (May 4th and 5th); chest diseases at the Brompton Hospital (May 11th and 12th); fevers at the Park Hospital, Hither Green (June 15th and 16th); obstetrics at the City of London Maternity Hospital (May 25th and 26th). A supper dance and cabaret is being arranged to take place at Claridge's on Wednesday, June 5th, at 9.30. Courses of instruction arranged by the fellowship are open only to members and associates, with the exception of the dermatology course. The secretary of the fellowship may be addressed at 1, Wimpole-street, W. 1.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. O. D. Brownfield, O.B.E., to *President* for Royal Tournament.

Surg. Comdr. F. C. Hunot placed on the Retd. List, at own request, with rank of Surg. Capt.

Surg. Lt.-Comdrs. H. J. McCann to *Curacoa*, and H. G. Wells to R.N.B., Portsmouth.

Surg. Lt. G. D. Wedd to *Dauntless*.

Surg. Capt. R. C. Munday, C.B., R.N., retired, has been awarded the Greenwich Hospital pension of £50 a year in the vacancy created by the death of Surg. Capt. H. E. South, R.N., retd., on March 10th.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdr. W. H. Butcher to R.N. Hospital, Chatham.

Surg. Lt. G. M. Tanner, promoted to Surg. Lt.-Comdr.

Surg. Lts. D. W. Bawtree to *Iron Duke*; and C. Seeley to *Pembroke* for R.N. Hospital, Chatham.

Proby. Surg. Lt. P. G. Burgess to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Capt. J. T. Robinson, M.D., R.A.M.C., is granted the local rank of Maj. whilst employed with the Trans-Jordan Frontier Force. (*Vide* THE LANCET, March 23rd, p. 704.)

REGULAR ARMY RESERVE OF OFFICERS

The undermentioned, having attained the age limit of liability to recall, cease to belong to the Res. of Off.:—

Col. E. L. Moss, C.M.G., M.C. (late R.A.M.C.).

Lt.-Col. M. Keane, O.B.E., R.A.M.C.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. R. A. M. Scott, from Active List, to be Capt.

ROYAL AIR FORCE

Group Capt. H. A. Hewat to Headquarters, R.A.F., Halton, for duty as Principal Medical Officer, vice Group Capt. F. C. Cowtan.

Squadron Leaders G. H. H. Maxwell to No. 5 Flying Training School, Sealand, for duty as Medical Officer, and V. R. Smith to Headquarters, Inland Area, Stanmore, for duty as Deputy Principal Medical Officer.

Flight Lts. H. Penman and F. I. G. Tweedie to No. 1 Flying Training School, Leuchars.

Flying Offrs. C. A. Lewis to No. 2 Flying Training School, Digby; W. G. S. Roberts to No. 6 Flying Training School, Netheravon; A. W. Smith to No. 3 Flying Training School, Grantham; G. H. Stuart to Central Flying School, Wittering; J. S. Wilson to No. 5 Flying Training School, Sealand.

Dental Branch.—Wing-Comdr. C. L. Colbran, O.B.E., is promoted to the rank of Group Capt.

RESERVE OF AIR FORCE OFFICERS
SPECIAL RESERVE

Flying Offr. J. L. Howland Easton is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE

Lt.-Col. G. L. Duncan retires.

DEATHS IN THE SERVICES.

Lt.-Col. William Hooper Pinches, R.A.M.C. (retd.), who died on April 9th in London, at the age of 73, qualified M.R.C.S. Eng. in 1884, and obtained his first commission as a surgeon in the following year. He became a major in 1898, lt-colonel in 1905, and retired in 1906. He served with the Hazara expedition in 1891, receiving a medal with clasp; accompanied the expedition to Dongola in 1896, and received the 4th class Medjidie and the Egyptian medal with clasp. He also served with the Nile Expedition in 1898, and took part in the charge of the 21st Lancers at the Battle of Omdurman that year, being mentioned in despatches. He served in the South African War 1899–1902, and was awarded the Queen's medal and the King's medal, each with two clasps. In 1918 he was employed in the Ministry of National Service.

PARLIAMENTARY INTELLIGENCE

OSTEOPATHS BILL

Select Committee's Inquiry

(Continued from p. 900)

THE Committee's inquiry continued on Friday, April 12th, with Lord AMULREE in the chair.

Withdrawal of the Bill

Mr. THORPE, K.C., principal counsel for the promoters, addressing the Committee said :—

This is the twelfth day of our appearance before your Lordships and I understand that after to-day your Lordships will adjourn for a period. I should be lacking in my duty to my clients and my duty to your Lordships if I did not explain my position. You will remember that on the first day of our proceedings, when I opened the case for the Bill, I indicated the way in which I would ask that the Bill should be considered. I said that there were people called osteopaths who were practising, and that whereas there was no distinction between the qualified and unqualified osteopath it was desirable that a register should be formed and a standard laid down by Parliament as to the qualifications that would entitle a man to be registered, and thereafter Parliament should say what duties those who were registered should be allowed to perform. In the course of the inquiry it became inevitable that a different issue should be presented. That issue, as I understand it, took this form, that it was desirable before such a register was granted that the osteopaths should prove scientific justification for their theory. I think I am quite fair in saying that that was the main point taken by the medical profession. That being so —and I do not think I could have resisted it—we get into this position, that your Lordships were asked to make a finding on a matter which at any rate is beyond some of your Lordships. When I try to find out the merits of this matter I find I am reading a language which I do not understand and that it is completely beyond me. So if we are to wait till your Lordships have decided that matter, we may be here longer than we at present anticipate.

The Bill as originally put forward, or the Bill as now presented by us, requires for its main structure the existence and continuance of the British School of Osteopathy. You will remember that Dr. Macdonald in his evidence said he himself was not satisfied with the standard taught by that school, and as the school now existing forms such a material part of the Bill I do not feel justified, and my clients do not feel justified, in asking your Lordships to pass the Bill with that school as it is at present constituted, occupying that position in the new organisation. That being so my clients say that we should not be justified in asking your Lordships to pass this particular Bill. I would not like to find myself in the position of trying to induce your Lordships to pass something which we believe to be fundamentally unsatisfactory. But I hope that your Lordships will not think that the osteopaths have lost any faith in the theories for which they stand. You will remember that Dr. Macdonald and Mr. Streeter both said publicly that they would welcome any inquiry and that they were prepared to take up any challenge made against them for the purpose of proving their doctrines to be scientifically sound. The position altered considerably, I think, when Sir Norman Walker was before your Lordships and said that he would have no objection to an investigation. [The relevant evidence was quoted; see THE LANCET, April 13th, p. 895.] We also had the evidence of Sir Arthur Robinson, who expressed the considered opinion of His Majesty's Government and stated that it appeared to the Minister of Health that a sufficiently strong case had not been made out for the adoption of the proposals of the Bill at the present time, and that the proper action at present was to set on foot an organised and careful scientific inquiry into the theory and practice of osteopathy by a properly constituted authority. [See THE LANCET, April 13th, p. 897.] This is a policy which I earnestly pray your Lordships will feel disposed to accept. I am instructed to say that immediately a voluntary register of osteopaths will be formed and that as soon as possible a School of Osteopathy qualified in the views of the osteopaths to give a proper training will be constituted and a clinic will be brought into operation. It is not for me to do more than to urge respectfully upon the Committee that an inquiry in the form of a Royal Commission or some equally responsible body should be asked to consider the scientific justification for the theory and practice of osteopathy. That is naturally in the Committee's discretion. May I suggest that the gentlemen who have already expressed their condemnation of osteopathy in the statement which has been placed before your Lordships, qualified though they may be to judge in this matter, would not be the best judges on a question which one hopes and anticipates that such a Commission will approach with an open mind.

Whatever may be the merits of this case I should like in public to make this claim, that the present Bill and the present inquiry have been asked for and promoted by the osteopaths themselves. One of the medical witnesses suggested that their cause was fraudulent. I would like to recall that it was the osteopaths with the assistance of the noble Lord (Viscount Elibank) who have come into the open and urged the presentation of this Bill in Parliament. They have satisfied at any rate one noble Lord, and they are ready to submit with confidence to any issue which has to be decided hereafter by an impartial tribunal. I thought it right to say what I have said at this juncture. It seems to me that the alternative will be the hearing of evidence on behalf of the medical and other professions, directed to an issue which is perhaps not an appropriate issue for your Lordships to consider. As far as this Bill is an issue before your Lordships I am instructed to say that in its present form we do not press it upon your Lordships. I have had an opportunity of speaking to the noble Lord who introduced the Bill in your Lordships' House and I have spoken with his authority.

ATTEMPTS TO CLARIFY THE POSITION

Mr. RADCLIFFE, K.C., counsel for the Royal College of Surgeons of England, the Royal College of Physicians of London, and other objectors to the Bill, said that if the Bill was no longer being promoted there was no longer any scope for him to call further evidence. If some recommendation was being asked for from the Committee in favour of an inquiry or a Royal Commission, he felt bound to state that the further evidence that the Committee would have heard would have been directed towards passing very severe comments on the scientific value of the suggested evidence in the Still Bulletins. If that evidence was not called he hoped that it would not be taken that the very eminent medical gentlemen who would have given evidence considered that there was evidence of any scientific value at all in these Bulletins in favour of osteopathy.

Mr. THORPE said that he was sorry that his learned friend had thought proper to say that. If their lordships decided not to pursue the matter further he took it that there would be no finding at all one way or another on the issue whether osteopathy was founded on a scientific basis or not and that they would part, neither party claiming a victory.

Mr. DICKENS, counsel for the British Medical Association, said that he did not want to depart from the general attitude of amiability in this matter. If Lord Elibank and the other supporters of the Bill were going to withdraw their support from it there was nothing left for their Lordships to consider.

Mr. THORPE : I was not speaking for Lord Elibank.

Mr. DICKENS : I want to know. Surely my clients are entitled to know whether the Bill is to be proceeded with or not.

Decision to hear Two more Witnesses

After the Committee had consulted in private the Chairman announced that having heard the statement of counsel they had decided to hear two more witnesses—Sir Henry Dale and Dr. Graham Hodgson.

In answer to the CHAIRMAN, Mr. THORPE said he did not propose to cross-examine the last witness

(Mr. Souttar), but it was not to be assumed that he accepted his evidence.

Dr. Graham Hodgson Examined

Dr. H. K. Graham Hodgson said that he was an M.R.C.P., held the D.M.R.E. Camb., was examiner in radiology for the Conjoint Board, a university teacher in radiology at the Middlesex Hospital Medical School, and a practising radiologist. He had had an opportunity of examining the radiograms which Dr. Macdonald had produced to the Committee and he had read Dr. Macdonald's evidence. There were three cases described in seven radiograms. All of the radiograms showed curvatures or other abnormalities of the spine. There was, according to his experience, nothing novel in the abnormalities shown. They were the sort of abnormalities which he saw week by week in his practice, and were the kind which orthopædic surgeons constantly treated by orthodox methods.

Counsel: Before this inquiry opened you had heard of osteopathic lesions ?—Yes.

Had you ever been able to discover what exactly was meant by the osteopathic lesion ?—I tried to on every occasion when I came across a case which had gone on to an osteopath after being treated by an orthodox doctor. In most of those cases I endeavoured to find out what exactly the interpretation was that the osteopath put on the film which I had taken, but I could not understand what exactly was meant by an osteopathic lesion until I read Dr. Macdonald's recently issued book "The Scientific Basis of Osteopathy."

Since you have read that book you think you understand what is meant by an osteopathic lesion ?—Yes, I think I do.

CRITICISM OF INTERPRETATION OF RADIOGRAMS

Shown examples of radiograms supplied by Dr. Macdonald, the witness said that there was nothing unusual about them. They were all examples of ordinary curvature of the spine. Referring to a radiogram of the fifth lumbar vertebræ which it had been suggested was a good example of an osteopathic lesion, the witness said that there was nothing wrong with the fifth lumbar vertebræ. It was merely a case of the way the radiogram was taken. A radiologist had to centre over exactly the same spot every time, otherwise the radiograms were not comparable. In one of the two radiograms, which were taken at different periods, the tube was centred at one point and in the other it was centred three inches above that point. Therefore the radiograms were not comparable. One was a bad radiogram and the other was a good one.

The witness added that Dr. Macdonald talked about "the tilting of the pelvis." The pelvis (Dr. Hodgson commented) was tilted because the hip joints were tilted. The inference drawn from the radiograms was thoroughly unsound.

Counsel proceeded to quote from "The Scientific Basis of Osteopathy" as follows :—

> "It is rare that the stereoscopic film fails to show a lesion which is palpable to the fingers. It is true that bony maladjustments are sometimes absent in the film when they are considered to be present by the evidence of the palpating fingers; in such cases the X ray film nearly always shows the localised œdema or fibrosis which is responsible for giving the deceptive findings on palpation."

The witness was asked for his comments on that passage. He said that the radiograms put in to demonstrate these lesions were simple adolescent curvatures of the spine which had been recognised by the medical profession for ages. The ages of the patients were 15, 20, and 23.

EXPERIMENTS TO TEST CLAIMS

On seeing the statement quoted the witness determined to carry out a series of experiments to test the truth of that claim. Since localised œdema was simply waterlogging of the soft tissues of the body as a result of strain or neighbouring inflammation, he decided to make an artificial œdema: he took a piece of steak 1¼ inches thick and cut from it two sections, each weighing 1½ ounces. He then injected into one piece of the steak as much water as he could get into it, using a hypodermic syringe, and increasing its weight by 50 per cent. Both ends of steak were placed in relation to the spine and X rayed, and no difference in density of shadow could be detected. A radiogram of the result was exhibited to the Committee.

It was impossible to detect a small collection of fluid by X rays in this situation, through the whole thickness of the body. Dr. Hodgson described a further experiment in which he took radiograms of his butler's stomach before and after the latter had drunk a pint of beer. The fluid was not visible in the radiogram.

Counsel: As far as you have been able to test it the claim made by Dr. Macdonald is not scientifically accurate ?—I am quite sure it is not accurate.

If it were true it would be of great importance to science ?—It would be a tremendous help. For years experimental work was carried out in order to try to visualise the gall-bladder by finding a dye which we could introduce into the gall-bladder to make it opaque to X rays. A gall-bladder may contain an ounce of bile, but it is quite impossible to X ray it in the ordinary way. In his book Dr. Macdonald says with regard to these cases of œdema that it is only a very small effusion, perhaps a teaspoonful. In an experiment I injected as much as 40 teaspoonfuls of fluid into or alongside the spine of a corpse and could not see it in a radiogram, and he claims to be able to see something like a teaspoonful.

The claim is important in regard to the existence or non-existence of the osteopathic lesion ?—I think it is of fundamental importance.

Did you go into the question of fibrosis ?—Yes. I took a patient who had had seven major abdominal operations. The abdomen was simply covered with scars. I took an X ray and no scars whatever were apparent. Perhaps Dr. Macdonald will tell me where the scars were. I then took quite a thick tendon from the back of the heel, placed it on the abdomen, and X rayed the patient. There was no sign whatever in the radiogram.

Dr. Hodgson added that Dr. Macdonald also pointed to a shadow which he called fibrosis of the lateral ligaments of the spine. That could not be the case because there were no lateral ligaments of the spine. There were anterior and posterior and other ligaments of the spinous processes, but no ligaments on the side of the spine, because it was there that the vessels and nerves came out which Dr. Macdonald talked such a lot about.

In answer to a general question witness said he had never detected, in his experience, which included the examination by X rays of hundreds of cases of abdominal conditions every year, any relation between lesions of the spine and abdominal disease, and could hardly have missed evidence of such a relation if it existed.

Dr Graham Hodgson Cross-examined

Cross-examined by Mr. Thorpe, witness said that the duration of exposure did not affect the results under discussion. From the radiographic point of view an artificial œdema, simulated by massaging the muscles of the back of a corpse into which fluid had been injected would produce just the same effect as œdema in a living person.

INTERPRETATION OF RADIOGRAMS

In answer to Lord Dawson, witness said that it was technically impossible to discern by X rays infiltration of fluids along the soft tissues by the side of the spine.

Asked about interpretation, the witness said that a radiogram could not lie, but the radiologist might misinterpret it.

What occurs to you to be the story told by an X ray photograph may not be the story conveyed to another medical man ?—No, of course not. You may have differences of opinion. But on a condition such as this we are talking about, œdema, there is not one radiologist in this country who would agree with what Dr. Macdonald has said.

Would all the radiologists in England arrive at the same conclusion as you have arrived at from that picture ?—Yes, I am quite certain of that.

Witness criticised Dr. Macdonald's interpretation of a radiogram showing spinal curvature in a patient, and Mr. Thorpe said that it seemed to him fruitless to pursue this cross-examination. Dr. Macdonald did not accept these criticisms of his X ray photographs and he had his answers.

Lord Dawson : May we take it that from the purely radiological and technical point of view the osteopathic lesions (œdema and fibrosis) we read of in this book are incapable of being shown ?—Witness : Alongside the spine, yes.

In answer to Lord Elibank, witness said that he believed he understood what was meant by an osteopathic bony lesion. Dr. Macdonald had quoted Louisa Burns's definition of it as " a disturbance in the relation of bones, not associated with rupture of ligaments, and usually not of a degree beyond the possible normal relations of these under certain circumstances." A curvature of the spine, such as was shown in the radiograms submitted, was, as far as witness understood it, called an osteopathic bony lesion. An osteopathic vertebral lesion was apparently thought to be a lesion of the soft tissues and joints. Dr. Macdonald gave only 1½ pages in his book to the X ray evidence of this type of lesion, though he said that this was the most authoritative evidence on the lesion.

Viscount Esher : Do you consider the radiogram scientifically fool-proof, and that it can be relied upon with absolute certainty ?—Witness : Yes, the radiogram is fool-proof. But it is the interpretation that is the essential thing.

Viscount Esher : We know that doctors often differ and make a different diagnosis from the same radiogram ?—Witness : Not often. I am sure that there is no radiologist on the staff of any hospital in the country who would agree with what Dr. Macdonald has said.

Viscount Esher : You think that your radiographic demonstration proves that there is nothing in the osteopathic theory ?—Witness : I have nothing to do with theory. I am simply concerned with the facts as shown. What Dr. Macdonald has said with regard to œdema and fibrosis is entirely wrong.

Viscount Esher : Is that sufficient to prove that there is nothing in the osteopathic theory ?—Witness : That is for your lordships to judge. I cannot say that. I am simply speaking with regard to the X ray evidence.

In reply to questions by Viscount Elibank, the witness said that it was stated in the book referred to that the osteopathic bony lesion is a disturbance in the relation of bones. Ordinary curvature of the spine would fit into this definition although he would not himself describe it in that way. Medical men saw many cases of that sort every day.

Viscount Elibank : If you accept that, may it not be that the osteopathic method of treating these cases which you see every day is a better form of treatment than that given in the past by medical people ?—If they cannot adduce any more scientific proof than they have done in these X ray photographs I cannot see much chance of that.

In reply to further questions, the witness said he had taken 1500 radiograms of cases of acute pneumonia in the past two years and had noticed nothing wrong with the spine in any case ; nor had he ever seen any connexion between the upper cervical vertebræ and disease of the accessory nasal sinuses.

Sir Henry Dale's Evidence

Sir Henry Dale, F.R.S., director of the National Institute for Medical Research, was next called to give evidence. Examined by Mr. Radcliffe, K.C., he stated that he was an F.R.C.P., a member of the General Medical Council, and secretary of the Royal Society. He had examined, as far as he could in the time available, the Research Bulletins submitted to the Committee, with particular reference to Bulletin No. 2, dealing with experiments of a physiological type. These Bulletins contained some papers which appeared to deal in no sense with the osteopathic theory.

Counsel : What are your conclusions as to the general work shown by the remainder ? Do you think that the evidence they contain is the kind of evidence you would recommend for submission to such a society as the Royal Society for its consideration ?—No. I should not take the responsibility of recommending it.

Or for publication in any scientific journal that you were responsible for ?—I think if I were called upon to give an opinion as to the suitability for publication in any scientific journal of any of these contributions—except one which has no reference to osteopathy and which was properly published in the *American Journal of Physiology*—my opinion would inevitably be that they were not really scientific papers.

That is not because of any doctrine which they tend to support which you do not agree with ?—The Witness : No. My prejudice, if I had any, would be in favour of a doctrine which ran contrary to received opinion. That is inevitable. If one is a scientific investigator, one spends one's life examining the basis of accepted views and hoping that one will be able to enlarge science by upsetting them and substituting sounder views on better evidence.

What would be your objections to recommending these papers as worthy of scientific consideration ?—My difficulty would be that they do not seem to me to have the first qualification of really scientific investigation, which is to obtain new knowledge. They have the appearance to me of being experiments carried out in order to provide what might look like evidence for a theory already accepted. That in itself might be valuable as direct evidence in favour of a theory only supported hitherto by clinical observation. But it would be at that point, I think, that the real scientific investigation would begin—namely, to discover what was the manner of the suggested relation between particular spinal lesions and particular physiological effects. I find no evidence of any attempt to discover the manner of the relation. The object seems simply to find evidence that it exists.

Are you yourself an experienced research worker ?—The Witness : I think that I have had a good experience of research. I have spent all my active life at it.

I suppose that it is necessary for that purpose to be experienced in the phenomena of experiments on animals ?—For the particular kind of investigation with which I am concerned and for the reports with which Bulletin No. 2 deals, yes.

Do these workers show a sufficient knowledge of that in their paper ?—I formed the impression that they do not.

Do they show the ability to distinguish what is important from what is unimportant in research ?—I should say that they do not show that ability.

THE ALLEGED PRODUCTION OF GLYCOSURIA IN DOGS

The witness proceeded to comment on an experiment described in Bulletin No. 2, purporting to demonstrate the production of glycosuria in dogs by artificially created osteopathic spinal lesions. What struck him in the first instance, he said, was that the author of this paper described a number of things which, to the mind of an experienced research worker, appeared like glaring anomalies as though they were matters that could be accepted without comment. The investigator took 33 dogs for the experiment and he subjected them, quite properly, to a period of preliminary observation under the conditions of the experiment. They were caged and fed as they would be after the spinal lesions were created. It was not apparent that any effort had been made to choose the dogs with a view to their special suitability for the experiment. The investigator found that of these 33 animals 18 showed natural glycosuria to such an extent that he could not use them for the experiment. In other words, he appeared to discover in over 50 per cent. of normal dogs a degree of glyc suria of the same order as he expected to produce by the infliction of the spinal lesion on others, and he had to throw out 18 of them before he began.

The second point that struck him, said the witness, was that when the investigator selected his 15 animals—which showed at most what he called a trace of sugar in the urine—for the experiment and proceeded to inflict the spinal lesion and to produce degrees of glycosuria described by Dr. Macdonald in his summary as of various degrees up to as much as 5 per cent.—which was a very high degree—there was no evidence throughout the description that any of these dogs showed symptoms compatible with glycosuria of that degree. Some of them gained in weight. Their appetities were not a matter of comment, except that they remained good; they were not said to be excessive. There was no description of them showing any abnormal hunger or thirst; and, what was particularly striking, was that the volume of urine excreted by these dogs which had been rendered glycosuric by the spinal lesion was, in the majority of cases, smaller than that which they were excreting before the lesion was inflicted.

The witness said that he found it impossible to attach any scientific importance to all this. If the glycosuria described was a genuine phenomenon, then it was something quite new, and having no relation to diabetes in man, for example; and no attempt was made to explain it. It was apparently accepted; and although he did not think that the statement was directly made, the implication was that this was an experimental demonstration of the fact that a spinal lesion could produce glycosuria of the type which was important in human disease.

COUNSEL: Even if it could be shown that spinal manipulation reacted on remote parts of the body, would that of itself be of scientific importance?—I do not think that in itself it would be of scientific importance. I can imagine circumstances in which it might be interesting; but the investigation, the scientific work, would begin with the attempt to trace the nervous channels by which the spinal lesion produced the remote effect.

It is the "How?" and not the fact which is important? —Yes.

Is that an example of what you find throughout the Bulletin, and not an extreme case?—I think so. I have chosen it as what seemed to be an important example, and one on which I believe some reliance has been placed in previous evidence.

Witness said that he found no convincing evidence that would justify the attribution of particular diseases to particular osteopathic lesions, and repeated this in answer to questions with special reference to typhoid fever, diphtheria, epilepsy, and diabetes. The witness commented on another experiment referred to by Dr. Macdonald in his book (p. lxxxvii.). He described the deduction from the results of this experiment that the spinal lesion was a possible ætiological factor in splenomedullary leukæmia was not science—it was simply nonsense. In answer to further questions the witness said that he had found no evidence that pernicious anæmia or asthma could be attributed to particular spinal lesions.

Having studied the work shown in these Bulletins, do you think it is work of a kind which would justify the pecuniary support of the Medical Research Council?—I do not imagine that the Council would be inclined to make a grant in support of work of this kind if it knew this was going to be the kind of result. That is all I can say.

Sir Henry Dale Cross-examined

Mr. THORPE asked whether witness agreed with the opinion expressed by Sir Norman Walker, who had said that he would not mind a proper investigation into the theory and practice of osteopathy, and would go the length of welcoming it.

NO SCIENTIFIC JUSTIFICATION FOR FURTHER INQUIRY

The witness said Sir Norman Walker was concerned with the whole question of the science and practice of osteopathy while witness had been asked for evidence on what was represented as the scientific basis of osteopathy. If asked whether he thought it worth while to hold a public inquiry on the scientific merits of what had been tendered as a scientific basis, he would say that he did not think there was any scientific basis to inquire about. He had no views to express on the point of the practice of osteopathy.

COUNSEL: Sir Arthur Robinson stated that the proper action at present was to set on foot an organised and careful and scientific inquiry into the principles and practice of osteopathy. Would it be correct to assume that the best informed medical opinion is available to the Ministry of Health?

WITNESS: I should think so. The Ministry's statement is a statement as to what they regard as the proper action from the administrative point of view. On that matter I do not care to express any opinion in agreement or disagreement with the Ministry.

The witness said he had studied the Bulletins submitted by the promoters to the extent that time permitted. He could not claim to have read every word. They had been in his hands rather under a week. He had read No. 2 in extenso because it dealt with matters on which he thought his opinion was something of a specialist's opinion.

Are the ignorances or illogical conclusions obvious to a scientific man? Would a scientific man reading Bulletin No. 2 come to the conclusion that there was nothing in it—that it was all rather nonsense?—Speaking as an individual scientific man, that was certainly the impression it made on me. I would not go so far as to say that it was "all rather nonsense." A good deal of it is commonplace and unconvincing. But what appears to me to be nonsense is the implied suggestion that evidence of this kind has any bearing on the claim that the osteopathic lesion is either the determining or predisposing cause in the majority of human diseases.

There are at least five registered medical practitioners who believe in and practise osteopathy. There is no suggestion against their honesty or intelligence, and if they apply the test you apply to Bulletin No. 2, ought they to know at once that the whole thing is unscientific? —May I put it this way. I do not think any medical man who was not previously convinced of the essential truth of the osteopathic doctrine would be convinced of it by studying the evidence presented in Bulletin No. 2. If on other grounds, by practical clinical observation and general experience, he had somehow convinced himself that osteopathy was true, I think he would read Bulletin No. 2 with that in his mind, and he would get the impression that there were a number of statements there compatible with the truth of the doctrine.

Would it be unfair to suggest that a registered medical man who has spent his life in beliefs contrary to osteopathy would approach an investigation with prejudice—not conscious prejudice?—I do not know what a registered medical man would do. I am rather at a disadvantage. I have never been in practice. My life has been spent in research.

Witness said he had not heard a great deal about osteopathy. He had heard it mentioned from time to time in the last 30 years. His investigation into Bulletin No. 2 was the first research work he had considered it desirable to make into the theory of osteopathy.

Re-examined by Mr. RADCLIFFE, on behalf of the Royal Colleges, the witness said that he did not find at all convincing the evidence put forward in support of the theory that the osteopathic lesion caused abnormalities in the alimentary canal.

Lord ESHER asked if a period under a week was sufficient to make a complete examination of the theory of osteopathy. The witness said he thought he had sufficient time to cover the suggested scientific basis for the theory of osteopathy. To make a detailed and critical examination of the evidence put forward in those various Bulletins would take several months, but he should be sorry to spend several months on such a task, because the evidence consisted very largely of repetition of statements on supposed evidence which was entirely unconvincing.

Lord ESHER: You know about the immunity theory of the osteopaths. Their theory is that if your body is in a proper condition you will not be liable to get those diseases ?—WITNESS: That is not only an osteopathic theory; it is a generally accepted medical theory.

The witness said he did not think any responsible medical research institute could undertake an investigation into the allegation that an osteopathic lesion altered the resistance of the body unless there was a reasonable body of prima facie evidence, and not merely evidence of the supposed effect but evidence as to the suggested mechanism. A statement that a cure was the result of the treatment involved an assumption. If the evidence in favour of the assumption justified examination it was worth investigation. But in the case of a new assumption with no apparent rational connexion with known facts of physiology it seemed to him that the onus of providing the evidence in favour of the assumption was on those who put forward the assumption. He suggested that no body of evidence had been produced in favour of the assumption in question to justify the expenditure of valuable time and money on medical investigation of its proof. Lord ELIBANK asked if the witness would have a share in nominating members on the committee of inquiry, assuming the Medical Research Council were asked to set up such a body. The witness replied that supposing the Medical Research Council were asked to set up such a body they might ask his advice.

Lord ELIBANK: If they asked your advice they would ask the advice of one who was prejudiced against osteopathy ?—I am not prejudiced against osteopathy. I have started with a perfectly open mind, but with a prejudice as a scientific man in favour of finding something which goes contrary to current tradition. It would be a disappointment to me not to find any convincing evidence.

In the short time you have not found it worth while to investigate or examine the results of the practice of osteopathy ?—That is outside the particular range of evidence which I have been invited to give to the Committee.

In reply to further questions, the witness said that he had not attempted to criticise the practical results of osteopathic treatment. He had been asked to express an opinion as to the scientific value of the evidence put forward. The examination of patients to be treated by osteopathy would be outside the range of his expert knowledge. He was not a practitioner of medicine.

Lord ELIBANK: In that event you do not disagree with Sir Norman Walker when he says he would be quite in favour of setting up a Royal Commission to investigate the whole principle of the theory and practice of osteopathy ?—I have not expressed any disagreement with Sir Norman Walker on that point. I have only said if a Commission or Committee is to be set up I do not think the evidence tendered on the scientific basis of osteopathy would justify the expenditure of public money and so on, in an investigation of that alone.

You say that without any knowledge of the practice of osteopathy ?—My statement is related simply to the experimental basis. I express no opinion as to the justification or otherwise of setting up a Royal Commission to investigate the practice of osteopathy.

This concluded the evidence of Sir Henry Dale.

Suggestions for Further Evidence

Mr. RADCLIFFE, addressing the Committee, said they had reached the position now when, as he understood it, the Bill was no longer being promoted. If it was merely withdrawn there would be no need for further evidence. But if the position was that some recommendation was still being asked for from the Committee in favour of an inquiry of some sort, or a Royal Commission, then he would have to ask their Lordships to hear relevant evidence.

The CHAIRMAN said the Committee had not considered the matter and they could not express any opinion at present. They would deal with the evidence brought before them.

Mr. RADCLIFFE suggested that the Committee would want to hear further evidence on the question as to whether or not it was proper that any public inquiry should be held.

Mr. THORPE said he thought his learned friend had misunderstood what he had said. The immediate question before their Lordships was their report to the House of Lords, whether the Preamble was proved or not. He was so bold as to ask that their Lordships might be kind enough to consider whether the evidence they had heard would justify them in making any recommendation. His learned friend now asked whether they would make any recommendation. The only issue before their Lordships was the Preamble. It so happened that the Ministry of Health and other witnesses had indicated a certain course. This was before their Lordships and he had asked them to consider it. His learned friend could not call evidence now as to whether the Committee should exercise their discretion in a particular way.

Sir W. JOWITT, on behalf of the British Medical Association, said that if a defendant's case was stopped halfway through by a court it must be and could only be on the assumption that he had won. If his victory was being qualified he had the plain right to call the whole of his evidence. If their Lordships were going to say they wanted to hear no more evidence they knew what that involved.

The CHAIRMAN said they had not stopped any evidence. Mr. Radcliffe had said that in view of Mr. Thorpe's statement he did not propose to call further evidence. The Committee had then decided for their own satisfaction, and for any decision they might come to, to hear two further witnesses.

Mr. RADCLIFFE said that he now understood the Bill could not be withdrawn except in the House of Lords. The Bill was thus before their Lordships and he could not close his case without calling his evidence. Mr. THORPE remarked that if their Lordships reported that the Bill should not proceed, then it was a mere formality.

Their Lordships having consulted in private,

The CHAIRMAN intimated that the Committee did not propose to alter the decision they arrived at in the morning. That concluded the hearing unless counsel wished to address the Committee.

Mr. RADCLIFFE said he was prepared to address the Committee on the Bill at large. If there was a possibility that their Lordships would report favourably on the Bill he must make his speech. Only an intimation from their Lordships that that would not be the case would make him refrain.

The CHAIRMAN: I thought you might draw that inference.

Mr. RADCLIFFE: Your Lordship having said that I think it would not be right for me to say more.

Arguments against Recommendation of Inquiry

Mr. RADCLIFFE added that the promoters of the Bill no longer wished that its provisions in any form should be reported on favourably by the Committee, if he understood the position. If that was the view put forward by the promoters he would ask their Lordships to accept the position and merely report in favour of the Bill not being proceeded with. Whether or not there were other steps that it might be right to take in order to establish the alleged position of osteopathy in this country was a matter which in their Lordships' position it would not be right to go into. It might be that the Minister of Health might think it right to institute or promote some inquiry of his own. That was a matter for his own discretion. He respectfully urged on their Lordships that they should not, in reporting in favour of the Bill not going forward, give any expression in favour of the view that the osteopaths had somehow made out a prima facie case in favour of having the practice and the theory of osteopathy inquired into by this public body. That issue had not been fully canvassed before the Committee, who had heard substantially only one side of the matter. He hoped the Committee would not say anything in their report that would seem to prejudge the case.

Mr. Dickens, on behalf of the British Medical Association, said that the Association would not have closed their case in answer to the Bill had it not been arranged that the scientific witnesses who had not given evidence then were to be called by others. They had examined the evidence for the scientific value of osteopathy which had been put before the Committee by Dr. Macdonald and were prepared to speak as to its value. He accepted the decision of the Committee not to hear any more witnesses but he hoped they would bear these facts in mind.

Mr. Thorpe said he wanted to dissociate himself from Mr. Radcliffe in the suggestion that if their Lordships favoured an inquiry that would mean that the osteopaths had made out a prima facie case. If their Lordships threw out the Bill and made no recommendation, it must follow from that that the osteopaths had proved no case. It would be most unfortunate if any decision of this Committee were to be advertised either as a victory for one part or the other. The matter had not been fully dealt with from a scientific point of view, and their Lordships would not think him disrespectful if he said that they were not the best people to deal with purely scientific questions. Any recommendation their Lordships might think fit to make would be in the public interest and would not reflect on either party or give either of them the right to say that they had won in a dispute.

The proceedings of the Committee then came to an end. A report will be submitted by the Committee to the House of Lords.

NOTES ON CURRENT TOPICS

The Budget: Income-tax Concessions

In the House of Commons on Monday, April 15th, Mr. Chamberlain, Chancellor of the Exchequer, made his Budget statement. In the course of a review of the past year he said that industrial activity had increased by 12 per cent. and manufacturing output had established a new record. Exports were up by £30,000,000. The January registration of motor vehicles was 30 per cent. and the February retail trade 4·9 per cent. greater this year than in the same period of 1934. There had been no rise in the cost of living, and savings of the nation had increased. The true surplus of revenue over expenditure, other than that devoted to debt redemption, was £19,500,000.

The total estimated revenue for the coming year was £735,580,000, and the total estimated expenditure was £729,970,000, leaving a prospective surplus of £5,610,000, which was increased to £11,025,000 by an appropriation from the Road Fund, the yield on the heavy oil duties and minor items. Dealing with changes he proposed to make in his Budget, the right hon. gentleman said that the total taxation now borne by heavy oil vehicles doing moderate annual mileage was only one-half to two-thirds of that charged on corresponding petrol vehicles. The diversion to heavy oil vehicles was involving considerable loss to the revenue, and from August 1st next the differential licence duty imposed in 1933 on heavy oil vehicles would be removed and heavy oil used as fuel by road vehicles would be taxed at the same level as petrol, namely, 8*d.* per gallon.

Mr. Chamberlain explained that the proposals he proposed to make in regard to income-tax allowances involved a change of method for the reasons, among others, that a return to the pre–1931 position would involve withdrawal of the 1931 concession which increased the earned income allowance from one-sixth to one-fifth, and that last year's reduction in the standard rate of income-tax had benefited the larger, rather than the smaller taxpayers. This year the small taxpayer, especially where his income was near the bottom of the scale, was now to have his turn. Instead of the first £175 of taxable income being charged at half-rate (i.e., 2*s.* 3*d.* in the £), the first £135 would be charged at one-third rate (i.e., 1*s.* 6*d.*). Thereby, 2,250,000 (or 70 per cent.) of the taxpayers whose taxable income was below £135 would get relief of 9*d.* in the £—three times the relief which they got last year; and 200,000 whose taxable incomes were between £135 and £175 would get relief in diminishing degree as the taxable income rose to £175. For example, a married man with three children having an earned income of £500 would have his income-tax reduced by the new proposal from £13 10*s.* to £9. It was proposed to increase the personal allowance for married taxpayers from £150 to £170.

With regard to the children's allowances, the right hon. gentleman said that these at present stood at £50 for the first child and £40 for each subsequent child. He looked on the continued diminution of the birth-rate in this country with considerable apprehension. At the present time it might seem that we had here a larger population than we were able to support in England. At the same time, they knew the difficulty which the Dominions found in accommodating a larger population when they themselves were troubled with unemployment. He had a feeling that the time would not be far distant when that position would be reversed, when the countries of the British Empire would be crying out for more citizens of the right breed, and when we in this country would not be able to supply the demand. If, to-day, we could give even a little help to those who were carrying on the race, the money would not be wasted. He proposed to raise the allowance for each child after the first to £50, however many children there were.

The smallest earned income—in the hands of a single person—liable to tax was now £125. Such a person received a personal allowance of £100 and an allowance for earned income of £25, but if the income was derived from investment it would pay tax on £25. This had pressed rather hardly on small taxpayers owing to the Conversion scheme. In future it was proposed that the exemption limit should be fixed for all types of income up to £125, whether consisting wholly or in part of investment income, and to avoid a sudden jump in liability to tax payable on total incomes between £125 and £140 there would be an over-riding provision by which the tax should not exceed one-fifth of the excess over £125. The cost of the relief given by the above measures would amount in a full year to £10,000,000, and in the current year to £4,500,000. It was not possible this year to deal with the 10 per cent. surtax surcharge. The restoration which it was proposed to make of the remaining half of the 1931 cuts in salaries and wages as from July 1st next, would cost in a full year £5,500,000, and in the current year £4,000,000. The cost of all the reliefs in the current year was £10,525,000. To meet this there was a disposable surplus of £11,025,000, which, on a final balance of the Budget, left a prospective surplus for the year of £500,000.

HOUSE OF COMMONS

WEDNESDAY, APRIL 10TH

Medical Officers of Health Superannuation

Captain Elliston asked the Minister of Health whether he was prepared to bring pressure on those local authorities whose failure to adopt the recommendations of the Askwith memorandum on salaries of whole-time public health medical officers meant denial of fair rates of superannuation to medical officers now approaching the age of retirement.—Sir Hilton Young replied: No, Sir. I have no power to enforce these recommendations, but in those cases in which my approval is required to the appointment of a medical officer of health, it is my practice where necessary to call the special attention of the local authority to the recommendations.

In reply to a question put later by Sir Arnold Wilson, Mr. Shakespeare stated that the Act had been put in force by 48 out of 63 county councils, 65 out of 83 county borough councils, 134 out of 273 borough councils, 6 out of 29 metropolitan borough councils, 321 out of 739 urban district councils, 243 out of 592 rural district councils, 25 out of 7058 parish councils, and 179 miscellaneous authorities. Of the authorities which had not put the Act in force, two county councils, two county borough councils, and 21 metropolitan borough councils had local Act superannuation schemes.

Detention of Disease Carrier

Mr. GROVES asked the Minister of Health under what statutory authority a farm hand at Iver, Bucks, was compelled, under a magistrate's order, to enter hospital as an alleged disease carrier.—Sir HILTON YOUNG replied: I understand that the person referred to was removed to hospital under the powers conferred by Section 124 of the Public Health Act, 1875.

THURSDAY, APRIL 11TH

Knacker's Yard at Writtle, Essex

Sir VIVIAN HENDERSON asked the Minister of Health whether he was aware that the inhabitants of Writtle, Essex, were gravely concerned by a proposal to establish a knacker's yard, for the slaughter of tuberculous animals, within 400 yards of the village, and the decision of the rural district council to sell two acres of land for the purpose; and could the inhabitants be assured that he would not approve the sale without first giving the representatives of the parish an opportunity of personally pleading their case.—Mr. SHAKESEPARE, Parliamentary Secretary to the Ministry of Health, replied: The answer to both parts of the question is in the affirmative.

Uninhabitable Houses

Mr. HUTCHISON asked the Minister of Health how many houses in the country which had been acquired by local authorities for demolition purposes as uninhabitable were still undemolished and still contained tenants who were paying rents to the local authorities concerned.—Mr. SHAKESPEARE replied: It is regretted that this information is not available. My right hon. friend may, however, take this opportunity of saying that in cases which have been brought to his notice and investigated it has been found that it has been necessary for the local authority to expend any rents received by them in order to keep the property even temporarily in tolerable condition.

Milk (Special Designations) Order, 1923

Major MILLS asked the Minister of Health if he would as a temporary or permanent measure, authorise such rural and urban district councils within the administrative county of Southampton as applied to him to grant licences to sell Grade A milk under the Milk (Special Designations) Order, 1923, in order to avoid unequal treatment of milk producers who desired to qualify for the bonus under the accredited milk scheme, in view of the fact that the Hampshire county council did not at present exercise its powers under the above order and had no meeting at which it could decide to do so until May 13th, and that at present only a small proportion of the district councils in the county could grant these licences.—Mr. SHAKESPEARE replied: My right hon. friend is in communication with the County Council upon this matter, and pending their decision he does not think it desirable to authorise any further district councils to grant licences to producers of Grade A. milk.

Bacteriological Examination of Chinese Eggs

Mr. HASLAM asked the Minister of Health if he was conducting further bacteriological examinations into Chinese eggs not in shell as imported into this country, and if such inquiries included both disease producing micro-organisms and those causing putrefaction; and if he was prepared to publish the results in due course.—Mr. SHAKESPEARE replied: My right hon. friend proposes to have certain further examinations made; the investigations have been directed both to disease producing micro-organisms and also to other non-pathogenic organisms, among which putrefactive organisms are included. My right hon. friend does not at present see any need to publish the results, but he will be happy to furnish my hon. friend with further details if he desires them.

Pasteurised Milk

Sir ARNOLD WILSON asked the Minister of Health whether he was aware that cream was frequently removed from milk before pasteurisation by large processing organisations and an equivalent amount of sterile fat added in the form of powdered milk; whether this practice was approved by his advisers; and, if so, whether he would arrange for a practical test over an extended period of the effect on children of this de-natured beverage as well as of milk.—Mr. SHAKESPEARE replied: The answer to the first two parts of the question is in the negative, and the third part does not therefore arise. I may perhaps remind my hon. friend that under the Milk and Dairies (Amendment) Act, 1922, the sale as milk of any liquid in the making of which dried milk has been used is prohibited.

Milk Supplied to School-children

Mr. R. J. RUSSELL asked the Minister of Agriculture what amount, if any, of the cost of the milk supplied to school-children was paid by the milk producer by deduction in arriving at the pool price, and what amount had been paid out of Government subsidy.—Mr. ELLIOT replied: In respect of the first 18,000,000 gallons consumed in the year ending Sept. 30th next, one-half of the loss incurred in supplying milk to school-children under the Milk in Schools Scheme is borne by the Exchequer under Section 11 of the Milk Act; the other half is borne, through the Milk Marketing Board, by the whole body of producers through the pool price for milk sales. Up to the end of February, 1935, 10,159,000 gallons had been consumed, and the total loss incurred by the sale of this gallonage at 1*s.* per gallon was £448,000, of which one-half is borne by the Milk Marketing Board. This figure, however, represents the actual cost of the scheme on the supposition that all the milk consumed by the children would otherwise have fetched the highest liquid price. In fact, but for the scheme some of the increased sales of milk to the children would have gone into low-price category manufacture for cheese and butter, realising with the Government grant under Sections 1, 2, and 3 of the Milk Act only 6*d.* a gallon. To this extent, therefore, sales of milk under the scheme have represented an increment to rather than a deduction from producers' returns.

Diphtheria at Leeds

Mr. GROVES asked the Minister of Health the cause of the heavy increase in cases of diphtheria and deaths from that disease recorded in Leeds during the year 1934, the mortality from diphtheria that year being the highest registered since 1913; whether his statistics showed if the increase in immunisation at Leeds had produced large numbers of carriers who had conveyed the disease to other children while not suffering themselves, or, alternatively, if there were any sanitary conditions in Leeds which accounted for the heavy increase in diphtheria.—Sir HILTON YOUNG replied: I am advised that the recent experience as regards diphtheria in Leeds accords with the general upward trend in the incidence of the disease which has recently affected all the large urban centres, especially those in the West Riding of Yorkshire. The answer to the second part of the question is in the negative.

MONDAY, APRIL 15TH

Telephone Facilities for Calling Doctors

Colonel HENEAGE asked the Postmaster General what response he had had to his advertisement calling attention to the opportunities for calling a doctor for a sick child when a telephone was installed.—Sir. KINGSLEY WOOD replied: I am sorry that it is impossible to distinguish, among the new orders for telephone service, which are now reaching the Post Office in large numbers, those which are attributable to a particular advertisement.

LONDON HOSPITAL.—Another £4000 is needed by the London Hospital for its new massage and electrical department which is to replace the present accommodation.

CORRESPONDENCE

THE NEED FOR MEDICAL PSYCHOLOGISTS

To the Editor of THE LANCET

SIR,—In his letter of April 8th Dr. Henry Harris makes a plea for the specialty of psychotherapy to be undertaken by men to be found in the asylum services. In the same number of THE LANCET there appears a review of "Psychology and Health" by H. Banister, Ph.D., and it is recorded that Dr. Banister is a practising psychotherapist to the Papworth Village Settlement. Dr. Banister, not a registered medical practitioner, has written a book which will attract the reader because of his command of language and the meticulous care of his construction. While the facts recorded are unlikely to find serious critics among qualified alienists, Dr. Harris is entitled to ask: "Why not go to the obvious source?"

As resident medical officer of Papworth perhaps I may be allowed to make a brief answer to this question. After defining the position of the physician as a psychologist, Dr. Banister devotes the first portion of his book to the development of the conception of a sentiment-formation tendency. So clear is the description of the integration of instinctive tendencies and emotions into sentiments and their further integration into character that one does not at first suspect the originality of the theory. This conception of the location of the origin of mental disability in the material object around which the sentiments are organised forms a working hypothesis of the greatest utility; and its importance is emphasised by the arresting statement made by Dr. James L. Halliday that 33 per cent. of persons referred to the regional examining centre at Glasgow were suffering from psychoneurosis.

To the insurance practitioner, weighed down by the information that the Minister views with concern the close correlation of the unemployment returns with the number of his certificates of incapacity, this consideration will indeed be a drop of oil on troubled waters. To the physician, charged with the re-establishment in industry of the partially disabled, it is of vital importance. Unemployment, from whatever cause, constitutes a disturbance of the object around which sentiments are normally organised. Dr. Banister's book and Dr. Halliday's report form an invitation to the alienist to leave his aisle for the ever-widening horizon of psychoneurosis.

I am, Sir, yours faithfully,

LEONARD STOTT.

Papworth Hall, Cambridge, April 12th.

To the Editor of THE LANCET

SIR,—This correspondence reveals a distressing lack of a sense of proportion. No one would be so foolish as to deny the need for more medical psychologists, but stumbling-blocks are put in the way. Thus Dr. Harris contends that "With regard to training surely there can be no doubt that the D.P.M. is merely a minimal requirement for *any doctor who is to be allowed to handle mental patients?*" (The italics are mine, but the question mark is Dr. Harris's.) If the letters M.C.O.G. replaced D.P.M. in the above sentence, and the word "obstetric" replaced "mental" Dr. Harris would have found that he had raised a hornet's nest about his ears. But because he is writing of psychotherapy no excitement is aroused.

The minimum requirement for medical practice is the possession of a medical qualification—not the possession of a variety of alphabetical appendages to one's name. Our foreign colleagues have recognised this fact and never fail to express surprise at the great variety of "sub-qualifications" available in this country. Incidentally, one would be interested to know how many of the "masters" under whom the budding psychotherapist is to sit possessed or possess a special diploma such as the D.P.M. Medical psychology is as fundamental to medicine as is physical examination. It is most emphatically not an enchanted forest reserved only for possessors of the D.P.M.

I would suggest that, in addition to a medical qualification and experience of the work, the medical psychologist needs, even more than other medical workers, a very wide range of intellectual interests. His motto must be *Nihil humanum alienum a me puto;* and his knowledge of normal psychology (and also of the philosophical problems germane to his subject) is much more valuable than experience of the major psychoses and of mental deficiency. There is no reason why any practitioner who has the time and the inclination for the work should not practise psychotherapy, for neither hypnosis nor analysis are sacerdotal mysteries requiring an initiatory ceremony.

Wide reading, far beyond the confines of medicine and medical psychology; thought; and the opportunity of treating the psychoneuroses are the essentials for the psychotherapist, whether he be the possessor of the D.P.M. or not. Last, but not least, he will do well to be a sound physician of the body as well as of the mind, for then he will be less likely to bring psychotherapy into disrepute by attempting psychological treatment of unsuitable cases. The medical psychologist is not mass-produced; he is inevitably trained individually and must be almost entirely home-made.—I am, Sir, yours faithfully,

A. PINEY.

Park-square West, London, N.W., April 12th.

To the Editor of THE LANCET

SIR,—I read Dr. Harris's letter regarding psychotherapy with interest. At a time when this question is much to the fore, and the establishment of psychotherapeutic clinics is being considered, attention should be drawn to the fact that the term psychotherapy covers a multitude of treatments—not to mention sins! To some, this type of treatment means an analysis of months or years; to others five minutes monthly, provided it occurs in a psychiatric clinic and not in general out-patients, is considered psychotherapy.

With such divergence of opinion, may I suggest that the time has come for research into psychotherapeutic methods, so ably stressed by Dr. Rees at the Royal Society of Medicine this week? It is obviously of extreme economic importance, in a crowded clinic, to determine (*a*) what patients are suitable for psychotherapy; (*b*) what is the minimum time for different types of disorders to be treated in. At present adherents of various schools express their opinions, but what is needed is an objective investigation on a large scale to compare the various treatments.

I note with some alarm that Dr. Harris demands that amongst their other virtues, psychotherapists should preferably be over 40. Yet some young patients occasionally express a preference for someone young to treat them. Truly, the lot of the psychotherapist is a hard one! Viewed with suspicion by his orthodox colleagues, he is told by the psychotherapists that qualifications count for nothing.

The analysts (often with reason) demand that he should be analysed, psychiatrists that he should hold the D.P.M.; by all that he should have the necessary character and flair; and now he has to be middle-aged as well. The one essential qualification left out by all of them is the possession of a private income.—I am, Sir, yours faithfully,

W. LINDESAY NEUSTATTER.

Wimpole-street, W., April 12th.

THE WIT OF HUGHLINGS JACKSON

To the Editor of THE LANCET

SIR,—I was fortunate in getting to know Dr. Hughlings Jackson when he was 53 and I was more than 20 years younger; and I was still more fortunate in being admitted to his friendship while I was still his house physician. During the years that followed I saw him frequently and experienced much kindness at his hands. When I first took a house, on the morning after entering on possession I was sitting alone after breakfast looking round somewhat disconsolately at the meagreness of my possessions; the bell rang, and Jackson walked in. He said he had just come to wish me luck and to see the house. It was the sort of kindness which he was always practising. The next day he came in and said that he had a sofa which he never used and he pointed out a place which he thought it might fill up, and he would be glad if I would take it away as it was really rather in his way. At the same time he brought me a case containing a dozen fish knives and forks which he wished me to have, but I was to say nothing about it, as they had been a wedding present, but he could not remember who had sent them. As he had another set, he explained that I would be really doing him a kindness if I relieved him of this one! Some years later, when I got married, he appeared as our first visitor on the morning after we returned from our honeymoon, just to wish both of us happiness and prosperity. Fortunately my marriage, instead of in any way interrupting our friendship, really cemented it, because my wife and he became just as intimate as he and I had always been, and this friendship continued until the very end, for in his last illness, when he scarcely saw anyone, he begged her to come, and always gave her a cordial welcome.

I have written elsewhere of his great consideration for others and gave as an example his particular consideration for my feelings on one occasion. A patient of his had died—a case of tabes dorsalis—and it was at the time when there was the great vogue for suspension treatment in that disease. This patient had suffered from a good deal of back pain. I went with Jackson to the mortuary where Dr. Walter Colman was making the examination, but, to my surprise, Jackson asked me to go to one of the distant wards to get some notes. I learnt afterwards from Colman that Jackson was afraid that some injury had been done to the back, and as I had carried out the suspension treatment, he feared that the examination might reveal this, so he sent me out of the way in order to spare my feelings. Fortunately, however, there was no evidence of the slightest injury, but I was naturally very much touched by such consideration.

Sir Andrew Clark used to say that there were two Yorkshiremen who had no sense of humour—Jonathan Hutchinson and Hughlings Jackson. I did not know Sir Jonathan intimately enough to be able to say whether this was or was not true of him. I knew Jackson so well that I can give the statement, so far as it concerns him, an emphatic contradiction. I think the following extract from his article on the Psychology of Joking will confirm this:—

"I think punning does not receive enough attention. In spite of Dr. Johnson's well-known dictum, we should not despise punning. Sydney Smith says that it is the foundation of all wit. Supposing three degrees of evolution, I submit that: (1) punning is the least evolved system of joking; (2) that wit is evolved out of punning; and (3) that humour is evolved out of wit. Everybody has heard of Sydney Smith's remark—that it requires a surgical operation to get a joke into the head of a Scotsman. But he spoke without distinguishing. The Scotch have a great appreciation of those highly evolved jocosities displaying the humorous, although, no doubt, a scorn of simple, lowly evolved jocosities, such as plays on words. It is difficult to form a conception of a Scotch punster; yet I have heard an Aberdonian, a physician of world-wide reputation, make a pun. Punning is well worthy of the psychologist's attention. I seriously mean that the analysis of puns is a simple way of beginning the methodical analysis of the process of normal and abnormal mentation. This, I think, I can easily show. We all have 'mental diplopia' when hearing the answer to a riddle which depends on a pun—'When is a little girl not a little girl?' Answer: 'When she is a little horse (hoarse).' The feeble amusement we have in the slightly morbid mental state thus induced is from the incongruous elements of a 'mental diplopia.' The word 'hoarse' rouses in us the idea of a well-known quadruped: at the same time we have the sensation of complete resemblance with the sense of vast difference. Here is, I submit, a caricature of the normal process of all mentation. The process of all thought is 'stereoscopic' or 'diplopic,' being the tracing of relations of resemblance and difference. To call punning a slightly morbid mental state may be taken as a small joke. But I do not think it very extravagant to describe it so; it certainly is not if it be a caricature of normal mentation. A miser has been defined as an amateur pauper; the habitual drunkard is certainly an amateur lunatic. And in the same style of speaking we may say that—well, we will say that punning is playing at being foolish; it is only morbid in that slender sense."

Jackson's teaching was very graphic because of his insight into medical problems, and the striking way he had of describing what his insight showed him. Thus, in an article on "Tumours of the Cerebellum," in which a reeling gait is too often present, his insight into the cause of the reeling is described in a most impressive way:

"Reeling is the earliest motor symptom. . . It is essentially a swaying of the trunk from back to front and from side to side. It is marked in some slight cases by the patient's walking with his legs apart: by this means small inclinations of the trunk are neutralised. The gait is worse when he walks with closed eyes. In early stages in slight reels, I believe the true fault is paresis of movements of the spine answering to the swaying of the trunk. The legs act erratically, but in an early stage they are blameless: they act erratically because they have to 'run after' the trunk to prop it up in its various over-inclinings. The legs, often blamed, are doing *more* than their duty."

Similarly, in regard to speech affection, his outlook was quite new.

"Swearing, for example," he said, "is not a part of language. It is a habit which has grown up from the impulse to add the force of passing emotions to the expression of ideas. It belongs to the same category as loudness of tone and violence of gesticulation. The distinction of these from language as an intellectual act may be best illustrated by the remark Dr. Johnson once made to a boisterous antagonist: 'Sir, you raise your voice when you should enforce your argument. . .' Curses have formed an element in all religious services: nowadays intentional cursing is obsolete: it has degenerated into meaningless swearing which, like cadence and gesticulation, is but a kind of commentary of the emotions on the propositions of the intellect. Vulgar people insert an oath at the proper intervals of their speech as a sort of detonating comma, and thus they render forcible statements which might otherwise strike their hearers as commonplace."

A good many years ago I was accused, as a disciple of Jackson's, of overdoing my admiration for him and being almost too insistent in my support of some of his doubtful doctrines. I do not think this was quite true, although I must say that I always had grave misgivings when, as sometimes happened, I did not see eye to eye with him in regard to some of his views. Someone has said that no man is a hero to his valet; but this does not depend upon any failing on the part of the hero, but on the want of capacity in the valet to appreciate the high qualities of his master. The relationship of a disciple to a great teacher is quite different. He sees in his teacher great qualities of which he has at least some appreciation, and he recognises him as being on a much higher intellectual level than himself. It is, of course, a form of healthy hero-worship, and this was the attitude of myself and, I believe, of many of his other disciples to the great personality of Jackson. It will always be a pleasure to me to think that I had the privilege of being on terms of reverent and at the same time affectionate intimacy with a man of such outstanding genius.

I am, Sir, yours faithfully,

April 8th. JAMES TAYLOR.

*** Dr. James Taylor, editor of the "Selected Writings of John Hughlings Jackson" and of his "Neurological Fragments," wrote in the latter publication an admirable biographical memoir. He was thus able at the recent Jackson memorial dinner to record many intimate details of his personality, and what he sets out above will be read with pleasure at the present juncture.—ED. L.

ASPHYXIA NEONATORUM: ITS TREATMENT BY TRACHEAL INTUBATION

To the Editor of THE LANCET

SIR,—The procedure described by Mr. Blaikley and Mr. Gibberd in your issue of March 30th, p. 736, promises to be of great practical value in the treatment of asphyxia in the new-born. Their method for dilatation of the solid lung with oxygen-carbon-dioxide gas mixture closely imitates what normally occurs shortly after birth, when the infant must somehow, and by some physiological action, bring about a phenomenally high air pressure in the smaller bronchi—far beyond that which obtains after the lung has once been dilated.

Now, what is this highly important physiological action to which every normally born infant owes its life? In considering this problem I wrote in 1903[1]:

> . . . "in children, the bronchioles dilate and contract rhythmically with inspiration and expiration. . . . At birth, before respiration has occurred, the lungs are solid and in an atelectatic condition, and at the first breath, the air inspired has to overcome the adhesion of the surface of the bronchial mucosa and of the alveolar epithelium. It is only after some time has elapsed that the lung is fully expanded and the pulmonary expansion, which occurs in spite of the tendency of the lungs to contract, is probably aided by the bronchial contraction during expiration, otherwise the chest would tend to remain collapsed if the air passed out of the bronchial tubes just as readily as it passed in."

A baby with each inspiration dilates the vocal cords and the bronchioles; with each expiration the vocal cords approximate and the bronchioles contract, so that the air is inspired more freely than it is expired, as its exit is slightly impeded, and so expiration is more prolonged than the corresponding inspiration. With forced respiration efforts the glottis and bronchioles are more dilated on inspiration and more contracted on expiration, and hence the inspired breath more definitely locked in; much as in paroxysmal asthma, when the expiration may be so prolonged that the next inspiration has to be made before the expiration is complete, and consequently the lungs become more and more distended, with the air pressure in the bronchioles and alveoli abnormally high. But it is by a precisely similar process of locking-in of the inspired air and increasing partial air pressure that the new-born infant gets the solid lung dilated up. Now, this work of Mr. Blaikley and Mr. Gibberd goes to show that a pressure of at least 20 cm. of water must be attained in the smaller bronchioles to effect this dilatation of the atelectatic lung of the new-born by artificial means; hence the futility of forcible inflation by the oxygen-gas mixture under a pressure of no more than 15 cm. —enough in after-life but wholly inefficient to expand the lung in asphyxia neonatorum. Indeed, they found that the air forced into the trachea should have a pressure of 30 cm. Surely no inspiratory effort of the infant could possibly bring about anywhere near such a high negative pressure?

It seems that the forcible respiratory efforts, with the consequent bronchiolar contractions and dilatations, are essential factors in bringing about such a degree of dilating pressure in the bronchioles. If that is true, one must realise that in such conditions the usual methods of artificial respiration are certain to fail.

A further point of interest lies in the fact that in using the authors' method "the movements of respiration are not necessary for the process of lung ventilation, which can be adequately maintained in the complete absence of respiratory movements." Quite so, for their procedure reproduces what normally occurs in the alveoli. The air pressure during normal inspiration and expiration is almost static; just as in the capillaries the circulating blood is little affected by attending cardiac systole or diastole. Differing air pressure in the alveoli and minutest bronchioles would influence the *rate* of gas exchange; hence under the forced air pressure, the baby will quickly develop a respiration-rate so rapid that it is impossible to follow it by alternating pressure in the bag; moreover, it would anyhow be futile to attempt this, for the maximum effect of quickened oxygenation has been obtained by the artificially high air pressure in the alveoli.

I am, Sir, yours faithfully,

Bristol, April 12th. PATRICK WATSON-WILLIAMS.

TREATMENT OF LOBAR PNEUMONIA

To the Editor of THE LANCET

SIR,—Even with the assistance of Felton's serum, as recommended by Dr. Davies and his colleagues in your issue of April 6th, it must be almost impossible for a pneumonia patient to recover without a full complement of sleep. Writing in the *Edinburgh Medical Journal* many years ago, a physician, whose name I have forgotten, claimed that chloral hydrate was almost a specific for acute lobar pneumonia and, in his experience, cut short the disease. He combined it with digitalis. Here, then, was a potent remedy which had the charm of producing sleep. I put it into practice forthwith, and was frankly surprised at the results obtained; cases which had seemed hopeless from the first recovered. My practice was to give 20 grains of pure chloral hydrate and half an ounce of the fresh infusion of digitalis at 9 P.M. on the first day of the illness, giving another grs. 10 an hour later if the patient were awake.

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[1] Bristol Med.-Chir. Jour., March, 1903.

The next and following days the patient had chloral grs. 20, with the digitalis night and morning if necessary, and no other medicine; for nourishment 8 oz. of milk and half an ounce of brandy every two hours if he were awake. As a matter of fact, these patients seldom sleep more than two hours on a stretch, but the sum total during 24 hours is often 10 to 12 hours, with comfortable drowsiness between. If sleep should be prolonged beyond four hours they should be roused for nourishment, but never to take the temperature. On no consideration whatever should an alkali be given with chloral hydrate.

I am, Sir, yours faithfully,

April 11th. T. PAGAN LOWE.

SIR JOHN ROSE BRADFORD

To the Editor of THE LANCET

SIR,—In an age when octogenarians are plentiful, and even nonagenarians by no means rare, the passing of Rose Bradford will, to his many pupils and friends—the terms are synonymous—seem grievously premature. Memory takes one back to 1889 when he won the Gold Medal at the London M.D. Exam., an honour which, for several years thereabouts, was "farmed" by U.C.H. Bradford inherited the teaching of a gifted band—Jenner, Quain, Bastian, Ringer, "Freddy" Roberts, and, by no means least, Vivian Poore, a master both of clinical medicine and of epigram.

References have been made to Bradford's remarkable memory. I have often heard Bradford himself speak of this gift as a striking quality of Poore's genius, who, years after the event, would remind his listeners of the clinical features of a particular case in a particular bed in Ward IX of the old U.C.H.

Of Bradford's early triumphs in physiology, and his almost precocious capture of the F.R.S., others better qualified have spoken. We remember him as the quiet helper and steadfast friend, and a personal instance will serve as an illustration. I had not seen him for nearly ten years when I unexpectedly met him in France in 1918. In the uniform of a major-general, and wearing the ribbons of the K.C.M.G. and C.B., his spare, slightly stooping figure contrasted somewhat strangely with those to which one had become accustomed during four years of war. And, in a moment it was Bradford and no other. In the same quiet voice he expressed the same measured concern for what I was doing, and asked how things were going with me. It was as if we had parted but the week before—so unfailing was his memory, so unswerving his sympathy.

And U.C.S., U.C.L., and U.C.H. will for many generations bear the imprint of the character and example of the most distinguished and lovable personality who has ever crossed the threshold of all three. I am, Sir, yours faithfully,

Bury St. Edmunds, April 13th. ERNEST STORK.

PANEL AND CONTRACT PRACTICE

Sickness in a Large Industrial Group

AT the annual meeting of the National Federation of Employees' Approved Societies a claim was made by the president, Mr. Henry Lesser, that the sickness statistics compiled each year by the Federation are unique in this country for the picture they give of occupational sickness. Details for 1934 are not yet available, but he was able to give the benefit per member as 11·21 days for men and 10·35 days for women, being a slight improvement in the one case and a slight setback in the other. The number of claims paid in 1934 was, however, lower than in 1933, both for men and women. Expenditure on influenza was notably less in 1934 than in 1933, but in almost every other group of diseases there were small increases. Incapacity among men from nervous diseases had, he said, increased steadily from 0·99 days per member in 1929 to 1·59 days per member in 1934; in women, on the other hand, the amount of illness from this cause had remained stationary. Reviewing the sickness experience of the last six years he found no indication of any lowering of the general standard of health among the members; the rate of sickness remained slightly below that of 1929. This encouraging result might, Mr. Lesser remarked, be attributed "to some extent at least" to improved medical service provided under the National Health Insurance Acts.

A Costly Omission

Clause 9 (12) of the terms of service requires an insurance practitioner to keep and furnish records of the diseases of his patients and of his treatment of them in such form as the Minister may determine. Some practitioners appear still to be under a misapprehension as to the meaning of the words "to keep." Reference to the context will show that the requirement is to keep the record in the sense of compiling it, and the requirement to furnish is equally insistent. A practitioner in the North of England is likely to have this fact brought rather sharply to his notice if the recommendation of the local insurance committee is adopted by the Minister of Health. On two previous occasions this practitioner had been fined owing to his failure to transmit forms of medical record on demand. Between June 22nd and Dec. 10th, 1934, repeated applications were made to him without avail for the return to the committee of the medical records of 42 insured persons removed from his list, and between Dec. 10th, when the matter was referred to the medical service subcommittee for investigation, and Jan. 24th, 1935, further application had been made without avail for the return of 49 more records. The practitioner admitted his omission to return them, giving as the reason for his failure to do so that he had been ill and had from time to time employed a locum tenens to help him in his practice, but preferred to attend to the clerical side of his work himself. Notwithstanding his undertaking to return the records within a week or so, and his statement that he realised the serious nature of his omission, the insurance committee decided to make representations to the Minister that, owing to his repeated failure to comply with the terms of service, the conditions on which the money for defraying the cost of medical benefit is payable to the committee had not been fulfilled and that the sum of £75 should be withheld, such sum to be recovered by deduction from his own remuneration. This appears to be a case where it would have been cheaper for the practitioner to have obtained clerical assistance.

Personal Attendance Overdone?

A London practitioner has incurred trouble for himself by an endeavour to do his best for the patient instead of handing over his responsibility to a hospital.

The patient was seen by this practitioner and his partner alternately twice in October and twice early in November. On the occasion of the first consultation he complained of sore-throat and cough; his chest was examined and his heart was found to be in a weak state; the cough was considered to be due to pharyngitis. On Nov. 6th the man attended the surgery and was seen by the partner who, on examination, found him suffering from palpitation and shortness of breath on exertion, bruit of mitral disease with dilatation of the right side of the heart, moist râles all over the chest, temperature normal, sputum greyish, and œdema of feet. The partner diagnosed heart failure and advised bed, pointing out the vital importance of rest. Visits were made to the patient four times up to Nov. 27th, and on the 29th idem he attended at the surgery and was instructed to return to bed. Further visits were paid on Dec. 3rd, 6th, and 10th, on the last of which dates, after an interview with the patient's brother, the partner arranged for the removal of the patient to a local hospital. After admission raised evening temperatures suggested the desirability of X ray and sputum tests; the former indicated a tuberculous condition of the lung and the latter the scanty presence of tubercle bacilli. The patient died in hospital on Jan. 13th. His brother, who made a complaint to the insurance committee, did not allege neglect against either the practitioner or his partner in so far as their treatment of the patient was concerned; but he thought that if the existence of tuberculosis had been diagnosed earlier life might have been prolonged. He suggested that the partner was negligent in not having arranged earlier for admission to hospital, and referred to the fact that other residents in the house where his brother lodged were not aware of the necessity for precautionary measures against infection.

In his evidence to the medical service subcommittee the practitioner stated that symptoms associated with mitral stenosis, from which the insured person was suffering, would produce exactly the symptoms found. There were no symptoms, such as night sweats, indicative of the existence of tuberculosis, and having regard to the diseased condition of his heart the cough was regarded as due to that condition. The insured person seems to a large extent to have disregarded the advice to have complete rest in bed, inasmuch as on every occasion on which he was visited he was found out of bed. The committee expressed themselves satisfied that both the practitioner and his partner gave proper and sufficient attention to the case and that they were in no way negligent in not arranging earlier for the admission of the patient to hospital. On the contrary, the fact that the partner continued to treat the insured person in respect of his very serious heart condition, rather than absolve himself of responsibility by sending the patient to hospital, suggested that he was taking a genuine interest in the case.

SOCIETY FOR PROVISION OF BIRTH CONTROL CLINICS. A lecture on the theory and practice of contraception will be given to medical practitioners and students by Dr. Gladys Cox on Friday, May 3rd, at the Walworth Women's Welfare Centre, at 6 P.M. At the centre demonstrations will be given at 6 P.M. and at 7 P.M. on Friday, May 10th, and at the same hours on Friday, May 17th. The fee for the lectures and demonstrations at the centre is 5*s*.; they are open to medical practitioners and students who have completed their gynæcological course, and those wishing to be present are asked to signify at which of the alternative hours they wish to attend.

MEDICINE AND THE LAW

Damages for Dead Person's Sufferings

UNACCUSTOMED consequences are flowing from the new legal rule that a living person may obtain damages for pain and suffering negligently inflicted on a dead person. It remains to be seen how far the rule will go in the field of professional negligence. Meanwhile, it is having its natural application in connexion with traffic injuries, as is illustrated by the case of Rose *v.* Ford recently decided at Birmingham assizes. A woman was injured by a careless motorist; her leg had to be amputated and, four days after the accident, she died. Her father sued the motorist for damages. Before 1934 there was a legal maxim that personal actions died with the person concerned; the judges had evolved the rule that in a civil court the death of a human being could not be complained of as an injury. To this rule an exception was made by the Fatal Accidents Act, sometimes called Lord Campbell's Act, in 1846. Under this statute it became possible for a wife, husband, parent, or child to bring an action for damages where death had been caused by wrongful act, neglect, or default. In the Birmingham case the father obtained £300 damages under this Act as he could have done before 1934. But he also obtained £500 damages under the new law. Had his daughter lived, she would have been entitled to damages for the pain and suffering caused by the motorist's negligence and for the loss of her leg. The Law Reform (Miscellaneous Provisions) Act of last year introduced the general principle (subject to certain exceptions and limitations) that on death all causes of action on which the dead person might have sued are henceforth to survive for the benefit of the dead person's estate. Thus the father could obtain the £500 for the four days of pain and suffering endured by his dead daughter and for the loss of her leg. Counsel for the defendant motorist sought to resist the claim or to diminish the damages by an argument which was really an attack upon the new law. Suppose, he said, a man has left all his property to the British Museum and is run over and injured by a motorist and dies of his injuries a week later; would it not be absurd that an institution like the British Museum should be entitled to stand in the dead man's shoes and to recover damages for personal injuries and suffering which an impersonal body cannot feel? The argument, however, met with no success.

In one respect the plaintiff failed in the Birmingham case. The father had claimed damages not only for his daughter's sufferings and the amputation, but also for the shortening of her expectation of life. Under this last heading Mr. Justice Humphreys declined to allow the father any damages because there was, he said, no evidence that she suffered mentally on account of that shortened expectation. Not long ago the Court of Appeal confirmed a judgment by Mr. Justice Acton (Flint *v.* Lovell) awarding £4000 for shortened expectation of life to a man of 70 who, by injury in a motoring accident, had lost the prospect of an "enjoyable, vigorous, and happy old age," and was now, according to the medical evidence, not likely to live for another year. If a living person can thus obtain damages for shortened expectation of life, will not a similar course of action survive to the estate of a dead person? It is worth noting that Sir Frederick Pollock, a high authority, has lately criticised the Court of Appeal for its attitude in Flint *v.* Lovell. The veteran jurist has no objection to the calculation of shortened expectation by reference to a sufficiently large average; the basis, as he says, is familiar enough in contracts of life insurance. But he doubts if it is possible for any human tribunal to attach any definite meaning to the supposed detriment of the shortening of life—"or, for that matter, to say whether death, when it happens, is itself a bad or a good thing." There must always be a danger, as Lord Justice Roche hinted in Flint *v.* Lovell, that to make the shortened expectation of life a distinct head of damages is to compensate the plaintiff twice over for what is really the same detriment. To return, in conclusion, to the imaginary case of the man who has left his property to the British Museum, it would certainly seem anomalous if the Museum should get damages for the accident which shortened his expectation of life when it is thereby receiving his property all the earlier.

Doctor's Delay in Report to Police

At a recent inquest at Camberwell the coroner commented on a doctor's duty to give prompt information to the police after having been called in to attend to someone found shot. The inquest was upon the death of Mrs. Edwards, aged 72, whose husband, Harry Hans Edwards, aged 80, is now remanded on a charge of having murdered her. There was evidence that the deceased was addicted to alcohol and came home one night the worse for liquor. Next morning about 6.30 a daughter heard a scream and, going to her parents' bedroom, found her mother lying across the bed and her father standing near. A doctor was summoned. He found that Mrs. Edwards had two wounds in the chest; Mr. Edwards had a revolver which the doctor persuaded him to hand over. The doctor went home and saw some patients who had called; he did not tell the police till after 10 A.M. and the police did not visit the Edwards's house till 10.50. The coroner pointed out the importance to the police of being able to examine the exact position and surroundings of the body at the earliest possible moment. He reminded the doctor of his duty to communicate with the police promptly, though he said the omission on this occasion had not greatly mattered. Coroners and police are naturally preoccupied with the dead; medical practitioners can hardly be blamed if they attend to the living. Nobody but the medical practitioner is in a position to assess the relative claims.

OBITUARY

JOHN ATHELSTAN BRAXTON HICKS,
M.D. Lond., D.P.H. Camb.

We announced last week the death on April 7th from pneumonia of Dr. John Braxton Hicks, pathologist in charge of the L.C.C. group laboratory at Lambeth.

John Athelstan Braxton Hicks was born in London the son of Mr. Athelstan Braxton Hicks, was educated at Epsom College, and received his medical training at Westminster Hospital. He graduated at the University of London as M.B., B.S. in 1907, obtaining honours in pathology, and proceeded to the M.D. degree three years later. In the same year, 1910, he took the D.P.H. at Cambridge, and was appointed pathologist to the Seamen's Hospital, Greenwich.

His work there justified the invitation to return to the Westminster Hospital, and he served the institution zealously in many capacities. He was assistant pathologist and curator of the museum for a period, was resident obstetric physician, and in 1917 was in general charge of the venereal cases. He was lecturer in the medical school on morbid histology and pathology, and he also compiled a card catalogue for the museum based on the one previously made by the late Charles Stonham. For two years, 1911–12, he was pathologist at Queen Charlotte's Lying-in Hospital. In 1913 he took the diploma of M.R.C.P. Lond., and arising out of his various opportunities for pathological observation, made many communications of clinical value to medical literature, including papers published in the *Proceedings* of the Royal Society of Medicine, the *British Medical Journal*, and *The Lancet*. He was appointed reader and associate examiner in pathology at the University of London, and at the time of his death was pathologist in charge of the group laboratory, L.C.C., at Lambeth Hospital.

Braxton Hicks was a pathologist of high standing, and his work was especially marked by the endeavour to make his findings of clinical value. We have received from his colleagues at Lambeth Hospital the following estimate of the man and his services to medicine: "The news of Dr. Braxton Hicks's death came as a grievous shock to his colleagues at Lambeth Hospital, where he was immensely popular with medical and nursing staff alike. He was recognised for what he was, a real 'character.' To his pathological work he brought wide experience, keen interest, and great thoroughness, and his reports, especially in an uncommon or difficult case, were sure to be full, detailed, and enlightening. He was a keen and well-qualified clinician and few things delighted him more, when in the wards collecting pathological specimens, than to be asked his clinical opinion of a case. His view, modestly though expressed, was seldom wide of the mark. In his laboratory he took refuge behind a brusqueness of manner which quite failed to hide from the discerning his innate generosity, for, however busy he was, his help was never asked in vain. He was sensitive and not one with whom it was wise to take liberties, but few could deliver so efficient a rebuke with so little rancour. He little guessed how much his 'billets doux' of good-humoured 'strafe' were prized by their recipients. He will long be remembered as a first-rate pathologist, a loyal colleague, and a most lovable personality."

Dr. Arthur Davies writes: "As a fellow student of John Braxton Hicks, may I be allowed to pay tribute to him. Coming to Westminster from Epsom with a high reputation for scholarship, he quickly impressed his contemporaries with the quality of his industry and ability. He showed himself to be worthy of his distinguished forbears in obstetrics and in forensic medicine, and gave early promise of eminence in pathology, gaining honours in the University of London M.B. examination. There was no doubt in our minds that he was a man of outstanding merit, and that a career of unusual distinction lay before him. This was confirmed by the success he subsequently achieved. Winning his spurs as pathologist to the Seamen's Hospital, he was invited to return to Westminster as assistant to our revered chief, Richard Grainger Hebb. The energy and loyalty with which he served our 'Master' still further endeared him to Westminster men. Later he succeeded to the directorship of the laboratory and continued to devote himself with the greatest assiduity to the work that devolved on him during a period of great development in the scope of investigation and research, and for which he was so well endowed. The qualities that distinguished him as a student remained remarkably constant, and to few is it granted to maintain such a standard of high endeavour. His fellow students will continue to remember and revere a loyal brother, and a distinguished son of their medical school."

GILBERT BERTRAM WARBURTON,
Ch.M. Manch., F.R.C.S. Eng.

THE death is announced on March 25th of Mr. G. B. Warburton, who recently retired from his position of senior surgeon at the Royal Manchester Children's Hospital on account of continued ill-health. He received his education at the University of Manchester, and graduated M.B., Ch.B. Manch. in 1907. He was house surgeon to the Manchester Royal Infirmary, and in 1912 took the diploma of F.R.C.S. Eng., and in the following year proceeded to the degree of Ch.M. In due time he was appointed assistant surgical officer in the out-patients' department of the Infirmary, and resident surgical officer, and later, as surgeon to the Royal Infirmary, became surgical tutor in the medical school.

At the outbreak of war Warburton was resident surgical officer at the Infirmary, and in 1917 joined the R.A.M.C. and served in Egypt until the end of hostilities. He attained the rank of major, and was appointed surgical specialist in the 76th Casualty Clearing Station of the Egyptian Expeditionary Force and was more than once mentioned in dispatches. On his return to civil life he was appointed surgeon to the Royal Manchester Children's Hospital, and he worked in connexion with this institution until his health broke down last year. Through his experiences at the hospital he became deeply interested in hare-lip and cleft-palate surgery, while he also did valuable work as visiting surgeon to the Bethesda Home for crippled children, and as consulting surgeon to the Manchester and Salford Society in aid of crippled children. Since 1922 he had been visiting surgeon to the Withington Hospital and took an active part in the development of this hospital, which has proceeded rapidly since the transfer of the institution to the control of the Manchester City Council.

Mr. Warburton's widow only survived him by a few days, and he leaves three sons.

MEDICAL NEWS

Royal College of Physicians of London

At a meeting of the College held on April 15th, Lord Dawson of Penn was re-elected president. Dr. O. F. F. Leyton and Dr. F. M. R. Walshe were appointed Examiners to the Conjoint Board in medicine and ophthalmic medicine respectively.—Lord Horder was appointed a representative of the College on the National Council for the Disposition of the Dead; Surgeon Vice-Admiral Sir Reginald Bond, M.B., a representative of the College on the Professional Classes Aid Council, and Dr. T. W. Wadsworth a delegate to the twenty-first annual conference of the National Association for the Prevention of Tuberculosis to be held at Southport, June 27th–29th, 1935.

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Surgeons, to the following candidates :—

Harbans Lal Anand, Edmund Johnston Baldwin, Godfrey Dacre Jennings Ball, Allan Henry Briggs, Rochiram Udhandas Hingorani, Vincie Vernon Hilton Hoakai, Alice Bowen Laker, Thomas Boyd Law, Lionel Arthur Lewis, Frederick Maxwell Lyons, Abraham Mellick, Jainti Dass Saggar, Lajpat Rai Sarin, Captain Peter Shannon, I.M.S., and Edward Wolstein.

University of London

At recent examinations the following candidates were successful :—

D. P. H.

Part I.—V. F. Anderson, Lalage R. A. Benham, J. H. Blakelock, Edith J. R. Browne, Hilda L. Byett, H. S. Davies, C. M. Dighe, David Erskine, W. G. Evans, Mohomed Farooq, O. M. Francis, H. A. Gilkes, J. V. Hurford, J. T. R. Lewis, Edyth L. Morris, Vaithianather Nada Rajah, R. M. M. C. Orpwood, L. M. Ram, C. J. Sanderson, Hubert Smith, Thomas Standring, E. W. Taylor, V. T. Vagh, J. D. V. Wijeyaratne, W. W. Wildman, and R. A. Wilson.

British Dental Association : New Headquarters

The new headquarters of the British Dental Association at 13, Hill-street, Berkeley-square, were formally opened by Mr. Geoffrey Shakespeare, M.P., parliamentary secretary to the Ministry of Health, on April 12th, in the absence of the Minister of Health, through illness. Mr. W. Graham Campbell, who presided, was supported by Mr. G. Northcroft, chairman of the representative board, Mr. Bryan Wood, chairman of council, Mr. Walter Wood, treasurer, Sir Norman Bennett, Mr. E. Hackforth, of the Ministry of Health, Mr. W. G. Senior, dental secretary, and members of the representative board. Mr. Campbell, in asking Mr. Shakespeare to open the building, said that the Association had moved from lodgings in Hanover-square to a house in Bloomsbury, and thence to a mansion in Mayfair. It had outgrown the quarters at Russell-square which had seen so many activities since 1920, and further accommodation was urgently needed for its increasing responsibilities. They owed much to Mr. F. J. Pearce, chairman of the housing committee, for his search for new quarters and his supervision of the alterations to the new building. Mr. Shakespeare said they were fully cognisant at the Ministry of Health of the valuable work which public dentistry played in the health of the community and the responsible part which the British Dental Association took in its organisation. He had recently been reading the history of dentistry which Mrs. Lindsay, the librarian, had written, and had been greatly interested in its developments. He paid a tribute to the importance of the school dental service and referred to the pioneer work in that field of W. M. Fisher, of Dundee. Sir Norman Bennett then asked Mr. Shakespeare to open formally the Robert Lindsay Library. When, he said, the British Dental Association moved to Russell-square in 1920 Mr. Lindsay was appointed its first dental secretary. He was a man of great energy and played a conspicuous part in the passing of the Dentists Act of 1921, and the subsequent developments of public dental service as an additional benefit under the Health Insurance Acts. He devoted his life to the Association and it was fitting that his name should be commemorated in the library of which his wife was now curator.

Royal Naval Medical Club

The annual dinner of this club will be held at the Trocadero Restaurant, W., on Friday, April 26th, at 8 P.M. The general meeting will be at 7.30 P.M. The hon. secretary *may be addressed at the* Medical Department, Admiralty, London, S.W. 1.

St. Mary's Hospital Institute of Pathology

A course on pathological research in its relation to medicine is to be held during the summer session at the institute of pathology and research at St. Mary's Hospital, London, and opens on May 2nd with a lecture on the determination of the true from the false in medicine and elsewhere, by Sir Almroth Wright, F.R.S., principal of the institute. The next lecture will be delivered on May 9th by Prof. E. D. Adrian, F.R.S., on the electrical activity of the brain, and on May 16th Dr. Igor N. Asheshov, formerly director of the bacteriophage laboratory at Patna, will speak on bacteriophage. On May 23rd the lecturer will be Dr. C. H. Andrewes (the cancer problem: some fresh clues); on May 30th Dr. R. G. Canti (cinematograph demonstration of the cultivation of living tissue); on June 6th, Sir Henry Dale, F.R.S. (the active substances in ergot); and on June 13th Dr. J. Henderson Smith (virus disease in plants). The lecturer and subject for June 20th will be announced later. The lectures are open, without fee, to members of the medical profession and students of the medical schools, and will take place at 5 P.M.

Chesterfield Royal Hospital

Mr. G. A. Eastwood, a former Mayor of Chesterfield, has left £10,000 to this hospital for building new medical wards.

British Health Resorts Association: Conference at Buxton

The corporation of Buxton will open on Friday, April 26th, a new clinic for the use of persons of moderate means who are suffering from various forms of rheumatic disease. Lord Horder will perform the opening ceremony, and the Association has been invited to hold a conference the next day. The discussion will be on the spa treatment of crippling conditions in children and adults, and will be opened by Dr. R. G. Gordon, of Bath, speaking from the physiological point of view, followed by Dr. A. H. Douthwaite and Mr. A. G. Timbrell Fisher. At the Devonshire Hospital there will be a demonstration of the various methods employed; the use of pools, manipulation baths, douches, whirlpools, &c., in orthopædic treatment. There will also be a discussion opened by Sir Landon Ronald on the place of amusement in the health resort; Mr. St. John Ervine and Mr. L. du Garde Peach also speaking.

West Sussex Contributory Fund

At the annual meeting of the West Sussex Associated ospitals Contributory Fund, reference was made to the laims of married members for the nursing association ebate, but for which the fund would be unable to pay nother 1*s.* a day on in-patients to the associated hospitals. he rebate was claimed last year by no fewer than 4332 narried couples, bringing about a loss to the fund of £936. he report submitted to the meeting showed a membership f 22,000. Associated hospitals received £4974 for 882 n-patients and 2298 out-patients. Non-associated hositals received £710 for 151 in-patients and 75 out-patients. ayments to the West Sussex county council for treatment f 843 children of members amounted to £44.

Board of Control

Dr. G. W. J. Mackay and Dr. Flora H. M. Calder have been appointed commissioners of the Board of Control (Lunacy and Mental Deficiency), on the retirement of Dr. S. E. Gill and Surgeon Rear-Admiral E. T. Meagher.

Dr. Mackay received his medical education at Edinburgh, where he graduated M.B. in 1921. In 1926 he took the diploma in psychological medicine. He acted as assistant medical officer at St. Andrew's Hospital for Mental Diseases, Northampton, and was deputy medical superintendent to the City Mental Hospital, Nottingham, before taking up his present post as medical superintendent of the Sandhill Park Institutes, Taunton. He has written on luminal in epilepsy and on glucose tolerance curve in that disease.

Dr. Calder was also educated at Edinburgh, where she graduated M.B. in 1923, proceeding to the M.D. in 1929. She obtained the diploma in psychological medicine in 1929, and is also a member of the Middle Temple. She is at present second senior assistant at the County Mental Hospital, Winwick, Warrington.

Medical Defence Union

At a council meeting last week Dr. Robert Forbes was unanimously appointed secretary of the Union in succession to Dr. James Neal, recently deceased.

Dr. Forbes was born at Wishaw in 1893, and graduated in medicine at Glasgow University in 1915, having already held a house surgeoncy in the Royal Victoria Infirmary. After acting as assistant and locum in the Kingdom of Fife and in the county of Durham, he was granted a commission in the R.A.M.C. In this organisation he was associated with Prof. Lovatt Evans in the administration of gas defensive arrangements. His original unit was the 137th Field Ambulance. On demobilisation he entered into partnership with Dr. John Galloway at Gateshead-on-Tyne, becoming assistant surgeon, and ultimately hon. consulting surgeon to the Gateshead Children's Hospital. He engaged himself prominently in the civic and public work of the Tyneside, and was well known throughout the North of England. In medico-political matters he took an active part, becoming chairman of the Gateshead division, a vice-president of the North of England branch, and a member of the Gateshead insurance and panel committees. He was instrumental in establishing many public medical services in the area, and took part in several successful struggles to secure adequate rates of remuneration for the colliery surgeons of that district. After 14 years of general practice Dr. Forbes was invited to become deputy medical secretary of the British Medical Association, a position which he is now resigning to take up his duties with the Medical Defence Union. While deputy medical secretary Dr. Forbes also acted as secretary to the ethical, insurance acts, medico-political, and dominions committees. At the present time he is a member of the Harrow urban district council and a Justice of the Peace.

Society for Relief of Widows and Orphans of Medical Men

At the quarterly court of directors, held on May 10th, Mr. V. Warren Low, the president, being in the chair, the deaths was reported of three members and of three widows in receipt of grants. One had been on the funds for 22 years and had received in grants £1870; another for 11 years with total grants of £880. A donation of £41 19*s.* 7*d.* was reported from the Bovril Medical Agency. Three new members were elected. Membership of the Society is open to any registered medical practitioner who is at the time of his election residing within a 20-mile radius of Charing Cross. The annual general meeting will be held on May 22nd. Particulars of membership from the secretary, 11, Chandos-street, London, W.1.

A Medical Tour

In connexion with the 150th anniversary of the Allgemeines Krankenhaus, Vienna, a special tour has been arranged that will afford medical men and their friends an opportunity of taking part in the celebrations. The tour is planned to last from May 11th to May 23rd. Starting from London on the afternoon of Saturday, May 11th, the visitors will arrive on Sunday night, and be plunged immediately into the sessions of the medical societies of Vienna, where clinical meetings have been arranged on numerous subjects. The working side of the tour, as planned, is relieved by excursions to places of interest in Vienna and its vicinity, and in particular it is mentioned that an optional method of terminating the proceedings by a visit to Bad Gastein will be found pleasurable. The inclusive price for the tour is, roughly, £32, and full information and details of other expenditure can be obtained from the Austrian Federal Railways, 31, Lower Regent-street, London, S.W.1.

Russian Congress in Physiotherapy

The third All-Russian congress of physiotherapy will be held at Odessa from August 25th to 30th. The principal subjects for discussion will be hyperergy and physical therapy; acute infectious diseases and physical therapy; consequences of injuries and physical therapy; the vegetative nervous system and physical therapy; short waves in biology and medicine; the significance of skin in the mechanism of physiotherapeutic actions. The principal speakers will include Prof. Brustein (Moscow), Prof. Anikin (Moscow), Prof. Nilsen (Sevastopol), Prof. Broderson (Leningrad), Prof. Plotnikov (Moscow), and Prof. Rachmanov (Moscow). Further information may be had from the president of the committee, Prof. Brustein (Moscow, U.S.S.R., Serebrjanny per. 5, room 7). It is suggested that travelling arrangements should be made through the "Intourist" travel bureau, Bush House, W.C.2.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
FRIDAY, April 26th.
Epidemiology and State Medicine—Disease in Children. 8.30 P.M. Special Discussion: The Problems of Prophylaxis in Pulmonary Tuberculosis. Openers: Dr. A. S. MacNalty and Dr. Gregory Kayne, Dr. Charles Miller and Dr. Reginald Lightwood; and Dr. D. A. Powell (Society of Medical Officers of Health). Society of Medical Officers of Health have been invited.
Urology. Week-end Meeting in Paris. 9 A.M. 1. Visit to Hôpital Lariboisière, conducted by Dr. Heitz-Boyer. 2. Visit to Hôpital Saint-Joseph, conducted by Dr. Papin.
SATURDAY.
Urology. Meeting in Paris continued. 9 A.M. 1. Visit to Hôpital Necker, conducted by Prof. Marion. 2. Visit to Hôpital Saint-Louis, conducted by Dr. Gouverneur.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, W.
THURSDAY, April 25th.—8.30 P.M., Dr. Emanuel Miller: The Medico-Legal Aspects of Aberrations in Adolescence.

worthy in this connexion that the one medical department was much more generous with its neurosis labels than the other, although the character of their material was supposed to be identical.

The interplay of functional and organic disease is so complex, and our knowledge of the former so incomplete, that an investigation such as this can hardly be expected to take us very far. But Boye's publication may at least encourage the recorders of hospital cases to give precision to their verdicts.

REDUCTION OF INFANT MORTALITY IN IRELAND

OUR Dublin correspondent writes: "Speaking at the conclusion of the debate on the estimates for his Department in the Dáil last week, Mr. Sean T. O'Kelly, Minister for Local Government and Public Health, gave some further particulars as to the infant mortality in urban areas. In his opening statement he had said that the general infant mortality had diminished from 65 per 1000 births in 1933 to 63 per 1000 in 1934, the previous average for five years being 69. He now added that the rate in all urban areas had decreased from 87 in 1933 to 78 in 1934, while the rate in rural areas had increased from 52 to 53. The four cities had shown the following decreases: Dublin, 83 to 79; Cork, 89 to 79; Limerick, 132 to 77; and Waterford, 102 to 88. The causes of this very pleasing improvement are not obvious, but some credit should be given to the extension of infant welfare schemes."

AN "L" OF A DIFFERENCE

Colonel James K. McConnel, author of "Adjustment of Muscular Habits," an excellent little book dealing with lines of treatment suggested by its title, writes as follows:—"In the reports concerning the House of Lords inquiry into the Osteopaths Bill, mention has been made of McConnell and Teal's text-book, 'The Practice of Osteopathy.' It would be a great kindness to me and others if you would allow me to mention that the part author of 'The Practice of Osteopathy' is one Carl Philip McConnell, I believe an American subject."

The book was written by Carl Philip McConnell and Charles Clayton Teal, and was first published about 30 years ago in Kirksville, Missouri, a later edition having appeared in 1920.

NEW PREPARATIONS

ERGOMETRINE.—Messrs. Burroughs Wellcome & Co. announce the commercial issue of the new ergot alkaloid, ergometrine, the isolation of which was described by H. W. Dudley and Chassar Moir a month ago (Brit. Med. Jour., April 6th, p. 520).

Four preparations of the alkaloid are issued for therapeutic use: 'Tabloid' Ergometrine, 0·5 mg. for oral administration; 'Wellcome' Solution of Ergometrine, 0·5 mg. in 2·5 c.cm. for oral administration; 'Tabloid' Hypodermic Ergometrine, 0·25 mg. for intramuscular injection; 'Tabloid' Hypodermic Ergometrine, 0·05 mg. for intravenous administration. The alkaloid used in these preparations is of a high degree of purity and crystallises readily from a number of solvents, as described in Dr. Dudley's later communication (Brit. Med. Jour., April 13th).

Ergometrine used during the puerperium rapidly causes contraction of the uterus. Given orally, in a dose of 0·5 mg. to 1 mg., ergometrine produces contraction after an interval of 6½ to 8 minutes, the contractions being identical in mode of onset and general character with those produced by active liquid extracts of ergot. Given by intramuscular injection, in a dose of 0·25 mg. to 0·5 mg., it produces strong uterine action in 3½ to 4½ minutes. Given intravenously, it produces in doses of 0·05 mg. a strong response in 110 seconds and in doses of 0·1 mg. in 65 seconds.

USEFUL CIRCULARS

FROM the Crookes Laboratories, Park Royal, London, N.W., comes a short pamphlet setting out the use of intravenous solutions of saline glucose and other infusions, and suggesting that the extensive use of collosol transfusions at home and abroad affords evidence of the absolute reliability of the solutions. The literature of the subject is carefully reviewed, and the construction of the collosol transfusion ampoule is clearly explained. Additions to the list of collosol solution are in preparation for use in cases of collapse.

By the Boots Pure Drug Co., Ltd., Nottingham, two booklets have been published through the publicity department of the firm giving serviceable information in simple form:—

1. *Special Medical Products.*—This pamphlet informs us of the composition and designed employment of a large number of pharmaceutical preparations which are in regular use and most of which from time to time have been noted in our columns. It is written as such circulars should be, for claims when made are reasonable and the details accurate.

2. *Chloramine Antiseptics.*—Various chloramine antiseptics, though alluded to in the first pamphlet, are here dealt with in detail. Chloramine-T is indicated in the treatment of all external infectious conditions, and a 0·5 per cent. solution is stated to be usually found adequate. In applications for the nose and throat and urethra, solutions of half that strength have been employed with success, while a 0·1 per cent. solution is recommended for use in eye infections. Solution tablets are supplied in various strengths. Dichloramine-T (toluenesulphondichloramide) can be employed where a constantly renewed antiseptic action over a long period is needed, and is therefore indicated, for example, in the treatment of such conditions as carbuncles and burns. Halazone (sulphondichloramino benzoic acid) is a chlorine compound for the sterilisation of individual quantities of drinking-water. It is supplied in tablets which quickly disintegrate and dissolve, but to obtain complete sterility the water should be allowed to stand for at least half an hour.

A MUNICIPAL YEAR BOOK

Sir Hilton Young contributes a preface to the 38th edition of the Municipal Year Book which has grown during the year by 80 pages, the total now numbering 1644. The increase has made the volume by no means bulky or unwieldy, the main sections of the book being divided by carton partitions carrying thumbnail labels which make reference pleasant and easy. In some directions the book has been improved for general reference; all national authorities, for instance, have now been brought within the compass of a single section, and in the sections dealing with different classes of authorities cross-references are given to the principal statutory provisions and the relevant legal decisions of 1934. Much of the descriptive material throughout the book has been rewritten; and for medical purposes it is gratifying to find the names and addresses of public analysts and of coroners, and a list of institutions appropriated in pursuance of the Local Government Act of 1929. Finally, a comprehensive review is given of leading law cases affecting local government during the past year. The Year Book is published by the Municipal Journal Ltd., Clement's-inn, London, W.C.2, at 30*s.*

PUBLIC SCHOOLS YEAR BOOK.—The forty-sixth yearly issue of this book shows little change except an alteration of title, to call attention to the fact that the book now contains full official information not only about public schools but about preparatory schools. This innovation was introduced last year and has given rise to much satisfaction. The Year Book is issued by H. F. W. Deane and Sons, The Year Book Press, Ltd., at 10*s.* 6*d.*

ADDRESSES AND ORIGINAL ARTICLES

MATERNAL MORTALITY [*]

By Eardley Holland, M.D. Lond., F.R.C.S., F.R.C.P., F.C.O.G.

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The failure of the maternal mortality-rate to yield one decimal point to the sustained attack which has been directed against it, but its tendency rather to react in the opposite direction, has endowed it with an air of mystery and malignity. The 1933 figure of 4·5 per 1000 is 7 per cent. higher than the figure for the preceding year, and 15 per cent. higher than that of twenty years previously. It is not only the rising figure which is so disturbing to the people of this country, but also the fact that our mortality figure is about 40 per cent. higher than that of the Netherlands—a country whose statistical methods in this respect are comparable with our own.

There is, however, nothing obscure about maternal mortality. Its ætiology, both in principle and in detail, is well known, and the way in which it can be remedied is, to a certain section of the medical profession at all events, perfectly clear. There is no lack of knowledge, but only an obstinate neglect of the application of known facts.

Ineffective Measures so far Taken

The manner in which the problem has been attacked during, say, the past twenty years may be summarised as follows. Let me begin with the professional obstetricians. They have put up a good fight; but having no control of funds and little influence in directing public health policy, their success has been small. They have induced the General Medical Council to impose a minimum period which students must spend in the maternity wards of the medical schools, and in other ways have brought about beneficial improvements in the training and examination of undergraduates. They have persuaded the boards of management of hospitals to found in-patient maternity departments and to increase the number of maternity beds. Having, after years of opposition, brought into being the Central Midwives Board they have caused the training of midwives to be progressively raised from three months to half a year and then to a year. They have held united discussions, have published reports on obstetrical teaching and practice, and have urged many reforms. They have given evidence before committees and have, collectively and individually, written and suggested much concerning the creation of a maternity service and the prevention of maternal mortality. Last, and in future promise perhaps most important of all, they five years ago founded the British College of Obstetricians and Gynæcologists, whose first object is "to encourage the study and improve the practice of obstetrics and gynæcology." This corporate body, with every obstetric professor and specialist and teacher in Great Britain and Ireland and the Dominions a Fellow or a Member, and with a growing body of well-approved Diplomates, is already becoming a powerful influence in all that appertains to the obstetric service of this country.

The public health authorities also have been extremely active. The Notification of Births Acts and the Maternity and Child Welfare Act have been placed on the Statute Book. The local authorities and county councils have entered the obstetrical field with enthusiasm; welfare centres, antenatal clinics, the provision of hospital beds have arisen everywhere. Committees have been appointed to consider various aspects of the problem; there have been new regulations for the notification of puerperal pyrexia, and medical officers of health now inquire especially in all cases of death in childbirth. A notable series of reports has been issued by the Ministry of Health, whose late chief medical officer, Sir George Newman, has done everything humanly possible to put the facts before the medical and lay public and to awaken interest. This is a remarkable record of high endeavour. But it has had no effect on the maternal mortality-rate. Everything has in fact been done but the one essential thing. Imagine the British Admiralty sending a battleship into action with an improvised crew. But that is just what has been done in the battle which has been joined against the maternal mortality-rate. The necessary personnel has not been trained, and until this has been done there is not the slightest chance of victory. This is the theme to which I shall return again and again throughout this paper.

INFORMATION AT OUR DISPOSAL

A remarkable array of reliable information has during the past few years been gathered about the problem. The statistics of all countries and the manner in which they are computed are available, so that country can be compared with country. Reports, prepared by Government departments and by medical bodies, of the problem as it affects individual countries or large cities have been issued; whilst the number of monographs dealing with the problem in a general way or as regards its different components is immense. It would, in fact, be difficult to mention any medical problem which has been attacked in so thorough a manner. The knowledge at our disposal is ample; all we have to do is to make proper use of it. The two most impressive documents which have been issued lately are what may be called the Newman Report and the New York Report (the Report of the Departmental Committee of the Ministry of Health, interim (1930) and final (1932), under the chairmanship of Sir George Newman; and the report issued by the New York Academy of Medicine on "Maternal Mortality in New York City," 1933).

Both reports should be studied together; for both have many points in common. The New York report, not emanating from any government or official department, can afford to be, and is, very much more outspoken on the medical or professional aspects. Both reports have classified the deaths as "preventable" and "non-preventable." The Newman Report concludes that at least one-half of the maternal deaths are preventable, and states that had the information available been fuller this number would probably have been higher. The American Report confirms the latter statement; for the information available was more complete and the proportion of deaths regarded as preventable was as high as two-thirds. The following extracts are significant:—

> "We are, however, convinced, that the primary essential for the reduction of a high maternal mortality is sound midwifery, before, during and after childbirth, and this does not chiefly depend upon administrative arrangements or the expenditure of public money." (Newman Report, final, p. 134.)

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[*] Read at a sessional meeting of the Royal Sanitary Institute on April 9th, 1935.

> ". . . at least half the deaths which have come under review could have been prevented had due forethought been exercised by the expectant mother and her attendant, a reasonable degree of skill been brought to bear upon the management of the case and adequate facilities for treatment been provided and utilised." (Newman Report, final, p. 134.)
>
> "The incapacity of the attendants, either in judgment or skill, contributed significantly to the large number of avoidable deaths. Their failure to provide proper prenatal care has already been pointed out. The prognosis of delivery was frequently incorrect. Labor was often improperly conducted. The physicians many times were apparently ignorant of indications and contra-indications for interference. Operative procedures were undertaken when there was no indication or plain contra-indication. Labor was terminated by rapid traumatizing delivery when non-interference was called for. Operative procedures were performed on potentially infected patients. Attendants were tardy in obtaining proper consultations. There was failure to treat severe complication with all the means which should have been available. Difficult obstetrical operations were performed by physicians whose training and experience could not be considered adequate." (New York Report, p. 215.)

Naturally enough, both reports created a considerable stir in their respective countries. The central theme which, thinly veiled in the British but naked in the American, runs through both reports is that the problem is first and foremost one of obstetric personnel. In other words, the main problem is one of assembling a properly trained corps of doctors and midwives and maternity nurses and of making their services available at the right times and in the right places, together with all the accompanying support of first-rate maternity hospitals.

MORTALITY STATISTICS AND DEATH CERTIFICATES

To what extent is a maintained or rising mortality figure due to correcting errors in death certificates? The Registrar-General bases his mortality statistics on death certificates and there is strong reason to believe that, so far as maternal mortality is concerned, death certificates sometimes fall grievously short of accuracy.

It is probable therefore that we need not attach too much significance to the *statistical rise* that has occurred in the mortality figure for 1933. For the rising figure may mean, not that every year a higher proportion of deaths occurs, but that the more careful scrutiny of death certificates is bringing into the category of maternal mortality deaths which in former years would have gone elsewhere. I believe the sieve is becoming finer and that in consequence we may have to face with equanimity similar or even higher figures for the next few years. It is a point worthy of consideration and much support is lent to it in recent publications. In the New York Report it was found that the percentage of error between the true cause of death and that given on the death certificates was no less than 18.

Exactly the same thing was found in the recent investigation into maternal mortality in Rochdale. When the investigators examined the case-records of 16 deaths which from the death certificates had been classed by the Registrar-General as due to some intercurrent disease ("associated" deaths), they found "seven cases in which there were serious obstetrical complications that could be regarded as factors of primary importance in leading to the death of the patient." They accordingly, for the purpose of their inquiry, transferred these seven cases from the class "associated" to the class "direct" deaths. Here was an error of no less than 44 per cent. in certification of the cause of death in childbirth, brought to light purely by chance. How prevalent is this sort of thing throughout the country? It has always seemed to me, from the ordinary routine of clinical experience, that the proportion of "associated" deaths to "direct" deaths was always ridiculously high as given by the Registrar-General (e.g., in 1933 it was 1 to 3·2). The public must be prepared for shocks if medical officers of health do their duty in this respect.

I will now deal with a few modern factors which impose an additional load on the ordinary hazards of childbirth and which clearly indicate that an improved maternity service is required even to keep the mortality-rate down to its present level.

ABORTION

The effect of including deaths from abortion in the maternal mortality figures must be clearly understood. The inclusion of abortions puts the maternal mortality-rate at the mercy of the abortionist. The death-rate from abortions is rising and the whole truth is not yet contained in the Registrar-General's figures. In 1926 the deaths from abortion formed 10·7 per cent. of the total maternal deaths, in the three years 1928 to 1930 they were 11·9 per cent., in 1932 they were 14·6 per cent. These figures, for some reason probably good, do not include coroners' cases. (If coroners' cases were included the above percentages would have to be increased by about one-sixth.)

From the preventive point of view deaths from abortion and deaths from childbirth are in a totally different category, and it would be helpful to a better understanding of the situation by the general public if they were kept separate by the Registrar-General.

How many of the abortion deaths occurred in the course of associated diseases, how many as the result of spontaneous abortion in healthy women, how many were "therapeutic" and how many were "illegal" abortions it is impossible to estimate. Certain facts are well enough known. One is that both "illegal" and "therapeutic" abortions are steadily increasing in number, and make an increasing contribution to the maternal mortality-rate. It is my impression that the number of unwanted pregnancies is much greater than it was, say, 20 years ago, because the contraceptive methods now in favour are less efficient than they were.

UNFAVOURABLE CHANGE IN METHODS OF OBSTETRIC PRACTICE

A striking change in the last 15 to 20 years is the remarkable widening of the indications for intervention during labour, and the great increase in the number of operative deliveries (induction of labour, forceps, and Cæsarean section). This has occurred in spite of the efforts to frustrate it on the part of leading teachers and text-books. It is interesting to speculate on the factors which have led to this, and I suggest that the following have been chiefly responsible: (*a*) the increasing employment of analgesics and anæsthetics which have by now become almost universal: in a certain proportion of cases these slow down labour and lengthen it, weaken the natural forces and so lead to an increase in the forceps-rate; (*b*) the building of hundreds of little cottage and other hospitals giving to local practitioners, who may possess neither the requisite judgment or skill, the opportunity of performing Cæsarean sections and other obstetric operations. The number of Cæsarean sections has increased in an astonishing manner.

In the Newman Report (final) 160 deaths after Cæsarean section were reported in the second series of

3805 deaths investigated. Many of these were after previous attempts at forceps delivery. The report states, with the characteristic courtesy and tact of official documents, "the Committee's observations lead them to believe that in some cases there may be a tendency to resort to Cæsarean section as treatment of complications of labour, perhaps without due consideration of other methods of obstetrical treatment." Exactly the same point was made by the late Whitridge Williams in the fifth edition (1923) of his text-book; after giving his opinion that the rising mortality of childbirth was to be explained on the supposition "that many practitioners in urban areas have been led astray by the teachings of those who regard labour as a pathological rather than a physiological process, with the result that interference upon insufficient indications is frequently undertaken by those who do not fully appreciate the risk involved," he goes on to state that an inquiry by a Committee of Massachusetts State Medical Society into the death-rate in that State during the year 1921 showed that, after puerperal infection, Cæsarean section was the most frequent cause of death. (*c*) Uninstructed antenatal work with its mistaken notions about "disproportion," "post-maturity," the "unengaged head," and the resort in consequence to unnecessary interference. (*d*) Any sort of interference with the course of normal pregnancy and labour, by meeting the demand of the patients for shorter labours, or by extension of the indications for drug or operative induction to suit the convenience of the patient, her friends, the doctor, the nurse. (*e*) An exaggerated idea of the value of the infant's life as compared with the life or health of the mother—due to the fact that nowadays pregnancies are spaced, regulated, and relatively rare. This interesting social change in reproductive method is exerting a great influence on obstetrical procedure.

ADVERSE FACTORS DUE TO CHANGING SOCIAL CIRCUMSTANCES

The additional load which these impose at the present time on the ordinary hazards of childbirth is probably not great; but they are slowly progressive. Amongst them may be mentioned: (1) a relative increase in primiparity, with restriction in the size of the family; (2) the increasing average age of all mothers, primiparæ and multiparæ; (3) the desire to limit the size of families must tend, *via* intentional abortion, to an increased maternal mortality-rate.

Two Aspects of the Problem of Lowering the Mortality

It seems to me that the problem of lowering the maternal mortality has two distinct aspects. The one is the lowering of the mortality in the so-called "black areas"; the other is the lowering of the mortality in the areas which may be called "favourable." The respective mortality-rates of these two are, as is well known, very different, and are set out for us clearly in the final Newman Report, the areas being placed in five groups. At the head of the favourable areas come the Home Counties with a mortality-rate of 3·4; at the foot of the black areas comes Wales with the figure of 5·9.

It is interesting to know what exactly would be the effect on the maternal mortality-rate for 1933 of bringing about a reduction of the rate for the "black areas," not down to the minimum figure of 3·4, but down to the fairly respectable figure of 3·9 for the group representing "Rural England, Southern and Eastern Counties." To do this it is requisite to know the number of deaths which occurred in the black areas, and Dr. Isabella Cameron has very kindly sent me the figures for four counties and twenty country boroughs in England, and ten counties and two country boroughs in Wales. The number of deaths was 715, and I have assumed a convenient mortality-rate of 5·9 for the whole group. (The calculation would of course be made accurately by anyone who had the complete figures for 1933 before him.) If the mortality-rate in these areas had been 3·9 instead of 5·9 the figure for the whole country would have been 4·1 instead of 4·5, representing a saving of the lives of 245 women. The calculation shows clearly that the effect of this degree of improvement in the "black areas" though most desirable would not be very remarkable, and would merely succeed in getting the mortality figures for the whole country back to the level of, say, twenty years ago.

LOWERING THE MORTALITY IN THE BLACK AREAS

It was always believed that this would be a fairly simple problem, but no one suspected how simple until its solution in Rochdale had been undertaken by the medical officers of health of that town (Dr. Andrew Topping and Dr. John Innes, his successor). The paper published in February last by Oxley, Phillips, and Young, entitled "Maternal Mortality in Rochdale, an achievement in a Black Area," was surely an astonishing obstetrical revelation. At the same time it was, I fear, a telling indictment of the local obstetric personnel. Rochdale for many years was in the unenviable position of having one of the highest maternal mortality-rates in England. During the three years 1929–1931 it was 10 per 1000. A study of the circumstances leading up to each death made it appear more than likely that a large proportion of the deaths had been due to too frequent intervention in the course of labour by the medical attendants. The problem was how to stop this. As far as the medical personnel was concerned there was not the least difficulty in getting their support, for as soon as the true state of affairs was brought to their notice the response was prompt and satisfactory, and the interest and support of doctors and midwives was at once enlisted. The second step was to awaken the interest of the community in general, and of the women in particular, in the medical facts. To effect this all available agencies, such as the pulpit, the platform, and the press, were used. The women thus were taught that, to safeguard themselves, they should make the fullest use of the antenatal clinics and should at once report at the first sign of any abnormality, and should refrain from attempting to persuade the doctor or the midwife to act contrary to their best judgment in hurrying the course of labour. The result was most remarkable. The "drive" was begun in 1931. For the three years 1932–1934 the maternal mortality of Rochdale had fallen from its reproachful figure of 10 per 1000 to a figure which was approximately the maternal mortality of the rest of the country—namely, to 3·9 per 1000. What was accomplished in Rochdale can be accomplished in similar centres. It is important to note the delightful simplicity of the methods employed. First and foremost there was no alteration in the personnel; there were the same doctors and the same midwives. There was merely on their part a change of spirit and a change of method. In the hospital it was particularly noticed that women with complications of labour were being sent in increasing numbers at a stage when the complication was capable of being treated with greater safety. In the second place it should be noted that the scheme itself, and the preliminary inquiries which led up to it, had its origin in the public health department of the borough, which was in the position to obtain the relevant facts, and to supply the administrative machinery required for the inception and development of the changes called for in the maternity services.

It is true that the Rochdale sample was only a small one, comprising about 1200 births per annum, and that the drop in the death-rate might be alternatively explained by the laws of chance or on the basis of natural variations in the incidence of disease occurring in groups of years. To me, however, all the circumstances of the case carry conviction.

I have described the Rochdale experiment at some length because it is an example of the simple problem of reducing the high mortality of the black areas down to a reasonably low level. Very different is the other aspect of the problem—namely, that of appreciably lowering the figure for the country as a whole, over and above what would be accomplished by cleaning up the black areas.

LOWERING THE MORTALITY IN THE FAVOURABLE AREAS

The problem of reducing the maternal mortality below the best figures for the country—namely, below the figures for the group of Home Counties or for London, or even of reducing it to the still lower figure for the Netherlands (i.e., just below 3 per 1000)—presents an entirely different problem. To reduce the mortality in the black areas was easy, and required no change of personnel and no additional expense. But to reduce the mortality to a figure below the existing best will be by no means easy and will require a very great effort. It can only be brought about by a radical change of personnel—of doctors and midwives both. This to my mind is the key to the whole problem of lowering maternal mortality. A personnel cannot be improvised, but must be trained. Before it can be trained the requisite training schools must be built and staffed. The whole process will take time and the country must be asked to wait patiently until the standard of midwifery practice has been remarkably raised and is undertaken by a select corps of men and women, based on high-class obstetric institutions. In Munro Kerr's words, "Holland's death-rate is low primarily because of the excellence of its obstetric service" (or, he might have written "of its obstetric *personnel*"). "Good physique, a simple and better dietary, absence of rickets, all play a part; but they are only influencing factors."

The problem of maternal mortality, let me repeat, is not obscure; and a considerable reduction in the present rate will not be difficult once the proper personnel, with the requisite training centres, have come into being and a new obstetric tradition has arisen—as in such circumstances it surely will. The great mistake that the central and local authorities of this country have made is in believing that the creation of an efficient obstetric service was chiefly an administrative problem.

A discussion of the administrative problem of who is to pay for establishing a network of obstetric training centres of university standard throughout the country, and for running them, is outside my province. Moreover, a discussion of details about methods of teaching and training the requisite personnel are beyond the scope of this paper. The most complete and up-to-date discussion of the whole subject, with references to recent reports and other literature, is to be found in Munro Kerr's splendid book on "Maternal Mortality and Morbidity."

It must be clearly recognised that practical training in obstetrics must come after graduation, and the proposed training centres would be used for post-graduates who, as residents for a period, would learn the work under recognised teachers. At the present time the necessary hospitals and teaching organisation for giving post-graduate training are (apart from the few resident posts available in maternity hospitals or in maternity departments of some general hospitals) almost non-existent in this country. The teaching of undergraduates is best done, as at present, at general hospitals with attached medical schools at most of which the instruction is now adequate. All undergraduates must be taught the principles of obstetrics. But the teaching of obstetrics as a practical art and craft, how to deal with complications and how and when to perform operations, should be reserved for doctors who after graduation decide to "take up obstetrics" and to devote further study to it. A sufficient period of responsible resident work in contact with high standards of practice and teaching will lead to the acquisition not only of skill and good judgment but also of what may be called an "obstetric conscience." Once an "obstetric conscience" has been acquired a doctor is proof against any amount of temptation to hurry or to interfere unnecessarily, or to offend in any other way against the cardinal principle of preservation of normality. All such obstetric practitioners (the majority of whom will probably be in general practice) would no doubt receive professional recognition in the form of a special diploma. They would gradually infiltrate the profession and come to be recognised and accepted by the lay public and by their colleagues.

There is nothing new in the foregoing proposal for the principle of a trained personnel. It has been reiterated many times by the obstetric branch of the profession, individually and collectively, from the 1919 "Report on the Teaching of Obstetrics" of the Obstetrical Section of the Royal Society of Medicine onwards. Anyone who cares may read this and subsequent reports, books, and monographs. I have not quite lost my illusions that something sensible will be done in this respect for the women of this country; but there is evidently a deal of vested interest and of jealously vested authority to be overcome. Why not make the maternity service a national service with centralised powers? The present conditions cannot be allowed to continue.

Medical Society of Individual Psyc logy.—Owing to illness Dr. Adler will be unable o deliver the lecture to this society on May 2nd, which was nounced in our issue of April 6th.

Eyesight Testing in South Africa.—Q South African correspondent writes: Under a propose mendment to the Medical, Dental, and Pharmac ct of 1928, statutory qualification will be require all makers of spectacles in the Union; apart fr established practitioners, only those who have p an examination will be allowed to pursue this calling. R stra-tions will take place through the Medical Council, but the opticians will be represented on the Board charged with this duty. The question has arisen whether spectacle-makers should be allowed to use instruments such as the retinoscope and ophthalmoscope, and it is maintained by the trade that there is no danger attached to the use of such appliances by properly trained opticians. Diagnosis by spectacle-makers, and the use of drugs such as belladonna, are, however, to be strictly banned. Such terms as "optologist," "eyesight specialist," and "ophthalmic optician" are to be forbidden under the new law.

CONTINUOUS DRIP BLOOD TRANSFUSION

WITH CASE RECORDS OF VERY LARGE TRANSFUSIONS

By H. L. Marriott, M.D., M.R.C.P. Lond.
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A. Kekwick, M.B. Camb.
HOUSE PHYSICIAN, THE MIDDLESEX HOSPITAL

The continuous drip method of giving saline and other solutions intravenously is recognised as a therapeutic measure of the greatest value. Its great merit is that it allows large amounts of fluid to be introduced into the circulation very slowly and under perfect control. As far as we can discover, however, the drip device has not hitherto been applied to the prolonged continuous introduction of large quantities of blood, and we believe that there is considerable scope for this form of transfusion. The principal purpose of this paper is to describe a technique which has worked efficiently and easily. We are able to incorporate an account of cases, including transfusions, which appear to be much larger and more prolonged than any on record, and the paper concludes with a discussion of indications for continuous drip transfusion.

For the administration of large quantities of blood it is obvious that more than one donor is required. In one of our cases ten donors contributed together 5620 c.cm. of blood. The donors should all be compatible with the recipient (though not necessarily of the same group) and must be of the same group as one another, or agglutination will occur when their bloods are mixed in the reservoir. The assembly of numerous donors is easy if properly organised. We have found it convenient to bleed our donors in pairs at 8 A.M. and 8 P.M., during the progress of a continuous transfusion. In the 17 cases we have done, 100 donors were used, and only 7 of them were from the British Red Cross Society's Blood Transfusion Service, as it was felt that every effort must be made to use relatives and friends of the recipients before falling back upon the donors of this remarkable and most valuable Service. The amounts taken varied from 200 to 900 c.cm., according to their age, weight, sex, and physical condition.

Technique

It is in our opinion important that the blood should be collected by a closed method, so that it is not exposed at all to the risk of infection. We have used a special method which may be described later in a separate communication. It is desirable also to be certain of obtaining the full contribution decided upon as being correct for any given donor, and not be obliged to take less through difficulties in withdrawing the blood.

The principal difficulty in the use of citrated blood or drip transfusion, as compared with saline, is that the corpuscles tend to sediment in the reservoir and block the drip bulb. Some method of continuous, aseptic stirring of the blood is therefore necessary. We have achieved this by bubbling a continuous stream of filtered oxygen through the blood.

APPARATUS FOR DRIP TRANSFUSION (FIG. 1)

1. An oxygen cylinder fitted with a pressure regulator and fine adjustment tap.
2. Five feet of rubber tubing, interspersed with three filters, which connects the cylinder to
3. A glass reservoir of 4-pint capacity fitted with a rubber bung with two perforations through which project glass tubes. To one of these tubes is attached the tube from the oxygen cylinder, and, on the under side of the bung, a rubber tube which reaches to the bottom of the reservoir. To the other tube is connected a short piece of tubing and a filter—it serves as an outlet for the oxygen. The base of the reservoir is fitted with a circular gauze filter made of 28 gauge pure nickel wire, with 20 meshes to the inch, which serves to strain off any clots. The reservoir fits into a tin hanger.

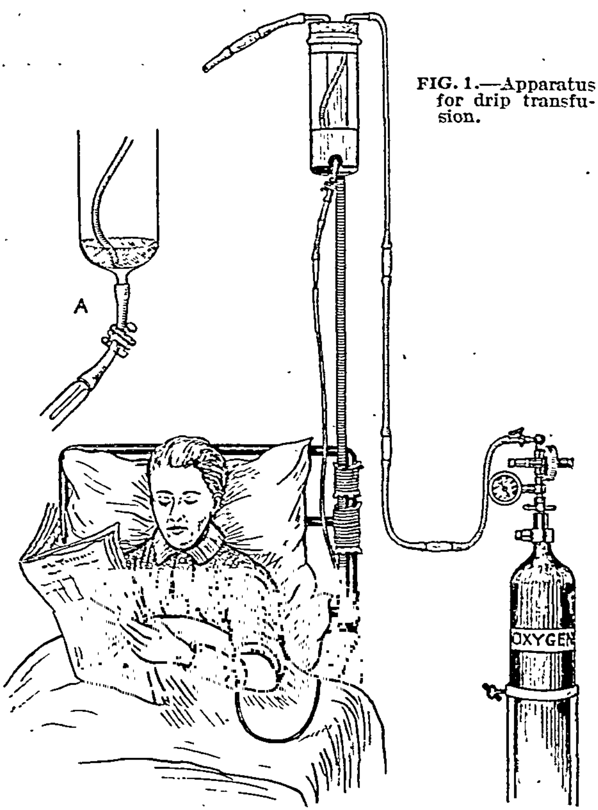


FIG. 1.—Apparatus for drip transfusion.

4. Four inches of rubber tubing (*not* pressure tubing), fitted with an adjustable screw clip, which connects the reservoir to—
5. A Laurie glass drip bulb (Fig. 2) joined to—
6. Seven feet of *pressure* tubing of 5 mm. external diameter (aspirating tubing) attached to—
7. A cannula of special device (Fig. 3) which can be tied into a vein firmly without kinking it. It is made of glass in various sizes and costs a few pence.

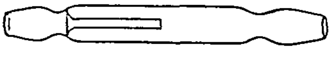


FIG. 2.—Laurie glass drip bulb.

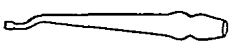


FIG. 3.—Cannula of special design.

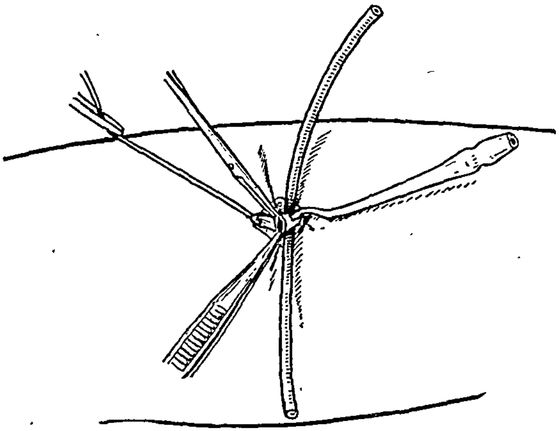
All the items of apparatus except No. 1 require sterilising, and may conveniently be baked together in a dressing tin along with the forceps, &c., mentioned later.

The first and most important step is selection of a vein in the arm or leg of the patient. Our choice has been, if possible, one of the veins in the middle of the forearm at a spot an inch distal to where it joins another vein, and with a valve at the junction which may be tested for by emptying the vein from above. Such a valve is useful in preventing reflux flow into the cannula which may occur under certain cir[illegible]stances. The middle of the forearm, rather th[illegible] bend of the elbow, is most desirable beca[illegible] of the elbow does not then compress the cannula against the vein wall and so obstruct the flow. There is no need for splinting, and the patient can flex his elbow as he wishes. The elbow flexure veins are the most inconvenient of all.

The reservoir with tubing connected is fixed at least 3 feet above the vein. A greater height is preferable as ensuring less variations in flow. An adjustable stand is a great convenience. The screw clip is left wide open. Care is taken to preserve the sterility of the outside of the distal 3 feet of pressure tubing which should rest upon a sterile towel. A pair of sterile Spencer Wells forceps is manipulated through the towel and clipped on to the tubing about a foot from the cannula.

It is convenient to introduce the cannula into the vein and start the drip flowing using saline rather than blood, and the next step is removal of the bung of the reservoir and introduction of enough sterile normal saline to cover the nickel gauze to a depth of half an inch (about 100 c.cm.). The Spencer Wells is again manipulated through the towel and temporarily released to allow enough saline to run through the tubing to expel the air in it. Air, of course, permanently remains in the upper part of the drip-bulb which is an air-lock. The forceps is reapplied after the minimum waste of saline.

Finally, before scrubbing up, the operator cleans the recipient's arm with spirit and applies a sphygmomanometer cuff and blows it up to a pressure sufficient to obstruct the venous flow and so render the selected vein prominent. He then sterilises himself and puts on a sterile gown and gloves. A small amount of 1 per cent. novocain is injected intradermally, and an incision made through the skin over the vein *transversely* to it and not more than 2 mm. longer than the breadth of the vein. The vessel is displayed by blunt dissection with forceps, and freed and presented into the wound, being there maintained by passing under it a piece of fine rubber tubing (Fig. 4). The distal end of the vein is ligatured, the ends of the ligature being left long, and another ligature is tied very loosely around the proximal end and clipped. The tourniquet is now deflated—a point very easily forgotten.



IG. 4.—Showing the vessel maintained by a piece of fine rubber tubing.

The vein is cut half across with scissors and the lumen displayed, showing the shining intima. Any bleeding is controlled by traction on the loose ligature. The tip of one blade of a pair of fine Spencer Wells forceps (spider forceps) is introduced into the right-hand (operator's right hand) side of the vessel and the forceps clipped on and left exerting gentle traction by its weight. With a pair of dissecting forceps in his left hand the operator grasps the left-hand wall of the vein and opens up the lumen while with his right hand he slips in the cannula (Fig. 4). The loose proximal ligature is tied behind the bulbous tip of the cannula. The Spencer Wells occluding the pressure tubing is released momentarily, being reapplied as soon as a satisfactory flow in the drip bulb is observed. A second ligature is passed and tied around the cannula which should only enter the vein up to the shoulder of its bend; this ligature is for safety and duplicates the proximal one already tied. The rubber tube under the vein is removed and the tiny wound should fit closely round the cannula.

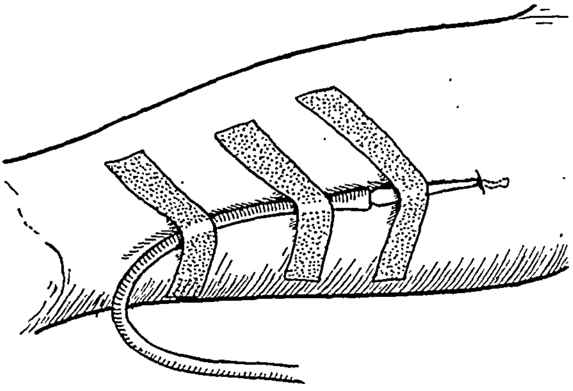


FIG. 5.—Showing the cannula and tubing fixed to the forearm by strips of strapping.

By means of strips of strapping the cannula and tubing are fixed to the forearm (Fig. 5). The long ends of the distal ligature are also tied round the cannula. Next the patient's arm is flexed slowly so that the operator can assure himself that even full flexion at the elbow does not obstruct the flow in the drip bulb, the Spencer Wells again being momentarily released and reapplied. If there is any obstruction, the elbow bend must be padded sufficiently to restrain the obstructive degree of flexion. Sterile gauze and wool is placed over the cannula and strapped tubing, and the whole bandaged up to the elbow, firmly below the cannula and *lightly above so that the vein is not compressed.* The operator may now cease to keep himself sterile.

The next procedure is to start and control the flow of oxygen in the reservoir. The bubbles can be observed in the saline by looking up from underneath at the base of the reservoir. About 60–120 bubbles per minute will keep the blood adequately stirred. A faster rate results in troublesome frothing. At this rate of flow the oxygen consumption is so small that the pointer of the cylinder's pressure gauge hardly moves at all in 24 hours. The oxygen has the minor merit of delivering the blood in an oxygenated condition.

Blood is now introduced into the reservoir by removing the bung and pouring it in. Up to 1500 c.cm. may be conveniently introduced, leaving enough space above it for froth. During the introduction there should be the minimum exposure of the blood, and care must be taken to avoid droplet infection by not breathing or speaking over it.

The flow of blood is now started by removing the Spencer Wells forceps. As the screw clip is still wide open the blood will be seen to flow in a rapid stream through the drip bulb. The screw is adjusted till the desired rate of flow is obtained. A flow of a litre in x hours is roughly obtained by a flow of $280/x$ drops per minute. A convenient rate of flow for many purposes is 40 drops per minute = a litre in 7 hours or a pint in 4 hours. The dripping will, however, be found to be subject to slight variations and the nurse should be instructed to inspect it at least half-hourly and to adjust it as may be required. She should also keep an eye on the froth above the blood; about 2 inches to 3 inches of froth indicates a satisfactory rate of oxygen bubbling.

Apart from these minor occasional adjustments, there is no further need to touch any part of the apparatus beyond periodically replenishing the reservoir with blood. Moreover the pressure tubing is so long that the patient can do what he likes. He may use his arm freely, turn over in bed, and sleep in any position he desires. The absence of a splint and the free mobility of the arm cause the patient to be untroubled by, and indeed oblivious of, the presence of the cannula in his forearm.

It is very important indeed that the citrate and saline solutions used shall be prepared from distilled water entirely free from dead organisms. Otherwise troublesome rigors are inevitable.[1, 2]

Case Records

We have now performed 17 large drip transfusions. It is realised that were this paper an attempt to assess the value of the method, 17 cases would not be enough. That is not its purpose, which is to describe a technique which is not only practicable but easy. This we feel confident in doing, since in the 17 cases we met with no technical hitch whatever in the transfusion of 71,390 c.cm. of citrated blood (60,710 c.cm. of blood plus 10,680 c.cm. of citrate solution), or over 15 gallons. The total time taken was 537½ hours.

The largest transfusion was 5620 c.cm. of blood plus 1000 c.cm. of citrate solution; the smallest was 2200 c.cm. of blood plus 400 c.cm. of citrate solution. The strength of citrate solution used was 3·8 per cent. in every case. The average rate of delivery of citrated blood to the patients worked out at 133 c.cm. per hour, or a litre in 7½ hours. Four of the cases are recorded below as illustrations of the possibilities of the drip transfusion of large quantities of blood. We have picked them out from the rest as in each one it appeared that the transfusion was unquestionably life-saving.

CASE 1 (No. 69786. Under care of Dr. C. E. Lakin).—The patient was a male, aged 27, suffering from severe ulcerative colitis, who had been ill for six weeks. His general condition was extremely poor and he was running a swinging temperature touching 103° F. in the evenings, and with a pulse-rate ranging around 130. Ordinary therapeutic measures had failed to arrest his downward progress and a fatal issue appeared imminent. The hæmoglobin percentage estimated immediately before commencements of the drip transfusion was 35.

Drip transfusion was maintained for 27 hours, during which 3400 c.cm. of blood and 700 c.cm. of citrate solution (total of 4100 c.cm., or just over seven pints) was introduced. Hæmoglobin estimations were carried out at intervals, and at the end of the transfusion his hæmoglobin was 98 per cent. The improvement effected in his general condition was remarkable. His complexion turned from extreme pallor to a rosy flush. His demeanour changed from that of a dying man to an optimistic invalid. His temperature dropped to normal and there was no more blood in his stools up to the time of his discharge from hospital.

CASE 2 (No. 69543. Under care of Dr. R. A. Young).—A male, aged 57, suffering from severe hæmatemesis and melæna of uncertain causation, but thought to be probably due to gastric ulcer. When drip transfusion was decided upon he had been in the hospital for five days and was rapidly getting worse and continuing to lose blood. His condition appeared desperate, and his hæmoglobin was reduced to 25 per cent.

Drip transfusion was carried out at an even slower rate than in the former case, and 47 hours were taken to administer 4100 c.cm. of blood and 800 c.cm. of citrate solution (total of 4900 c.cm., or 8½ pints). The patient slept during most of the time without sedatives. At the conclusion his hæmoglobin had risen to 103 per cent. and his complexion was positively ruddy. He expressed himself as feeling almost well, and read a newspaper with interest. His blood pressure was taken at intervals and slowly rose from 110/60 at the commencement to 150/75 at the end. In spite of this rise he had no more bleeding and made a smooth recovery.

CASE 3 (No. 70148. Under care of Mr. R. Vaughan Hudson).—A man, aged 37, known to have a large duodenal ulcer, admitted suffering from severe melæna. When we started drip transfusion he had been bleeding for five days. His hæmoglobin was 30 per cent. Mr. Vaughan Hudson considered that his condition was such as to make operation then quite unjustifiable.

Forty hours were taken in transfusing 4600 c.cm. of blood and 800 c.cm. of citrate solution (total of 5400 c.cm., or 9½ pints). His hæmoglobin rose to 105 per cent. and he felt and looked enormously improved. Operation disclosed a duodenal ulcer the size of half a crown, whose base was partly formed by the gall-bladder and pancreas. Partial gastrectomy was performed and the first part of the duodenum removed with part of the ulcer. At the end of the operation the patient's pulse-rate was 84. He made an uninterrupted recovery.

CASE 4 (No. 58259. Under care of Dr. G. E. S. Ward).—The case of this woman is of peculiar interest in regard to the pathology of her condition, and it is being independently reported and discussed. She was suffering from very severe hæmolytic anæmia, thought to be of the acholuric jaundice type. She showed a marked reticulocytosis combined with progressive anæmia. It was considered that splenectomy offered the only hope, but was out of the question on account of her very poor condition.

When drip transfusion was started her hæmoglobin was 20 per cent. During 51½ hours a total of 5620 c.cm. of blood plus 1000 c.cm. of citrate was transfused. At the end of this time her hæmoglobin had risen to 88 per cent. In our opinion the rise of only 68 per cent. indicated severe blood destruction, as from our experience in other cases we would have expected a rise of 90 to 100 per cent. Splenectomy was performed by Mr. Pearce Gould. The patient has made a complete recovery.

The four cases recorded have been deliberately sketched in the merest outline as the purpose of this paper is only to describe a technique. They serve merely as illustrations of what can be done in the way of transfusion of large amounts of blood over a long time. In all our cases repeated observations of numerous clinical, hæmatological, and biochemical facts have been made, and when there are enough of them it will be possible to draw conclusions. Meanwhile the practicability of the technique seems of sufficient importance to warrant a preliminary communication in the hope that others will investigate its potentialities.

Our experience has shown that in order to carry out drip transfusion with a proper regard to the recording of data, it is wise to have a printed case-sheet or form, itemising in an orderly manner the necessary observations, with blank spaces left for filling them in. Such a case-sheet saves much mental wear and tear. We have constructed one as a printed quarto double sheet and shall be pleased to supply copies.

Possible Indications

We believe that the method which has been described, or one similar in principle, will be found to have important applications in the treatment of both medical and surgical conditions. It is our conviction that blood transfusion is to-day exploited only to a very small extent of its potentiality, because it is still being employed in homœopathic doses. There is far from general realisation of the fact that a transfusion of 500 c.cm. to an adult does no more than augment his hæmoglobin by some 8 to 10 per cent. of its normal value. It is the more surprising that this valuable method of treatment is so feebly used when blood is easily and freely available everywhere.

The drip method is firstly essentially for *large* transfusions, but it is necessary to point out that what is or is not a large transfusion depends mainly upon the size of the patient. Thus a transfusion of a litre in an adult of 11 st. is roughly paralleled by a transfusion of 46 c.cm. to a baby of 7 lb. A transfusion, for the purposes of this discussion, may arbitrarily but serviceably be defined as "large" if it exceeds 5 c.cm. per pound of the recipient's body-weight.

The second essential characteristic of the drip method is that it is for *slow*, controlled transfusions. It enables the blood to be introduced over many hours or several days. The normal blood volume is approximately one-eleventh of the body-weight, or 5 to 6 litres in an adult.[3] In transfusing for anæmic states it is possible to calculate very roughly the amount of blood required, from the deficiency of the hæmoglobin below an ideal of 100 per cent., allowing 500 c.cm. of blood for each 9 per cent. of deficiency. We employed this method in our cases and generally found the practical result to work out accurately with the theoretical prediction.

It is proposed to limit discussion to the possible scope of drip transfusion in the several groups of anæmic states.

According to Price-Jones [4] the normal red cell count is from 4½ to 6½ millions per c.mm. in males, and from 4 to 6 millions in females. The normal range of hæmoglobin percentage is from 95 to 117 and from 85 to 111 in the respective sexes. Anæmia exists when the figures are below the lower normal limits. Modern classification of the anæmias rests upon the simple idea that a patient is anæmic either because he is not making enough red cells or because they are being lost or destroyed too fast. Deficient formation on the one hand and excessive loss or destruction on the other are the primary categories.

HÆMOPOIETIC ANÆMIAS

The anæmias due to deficient formation of red cells all intimately concern the bone-marrow, which is the factory of their origin. Diminished output of red cells from the bone-marrow is due either to depression —either non-specific or specific—of its blood-forming function, or to a normally active marrow being, in one way or another, deprived of the raw materials essential for hæmopoiesis.

Anæmia due to non-specific depression of the bone-marrow occurs in many diseases accompanied by general toxæmia. The activity of the bone-marrow is depressed along with the activity of all the other organs. Examples of such diseases are chronic sepsis, many fevers, and cancer. The conditions which may give rise to anæmia in this way are so numerous that they form, necessarily, a large group of the anæmic states. In all of them the patient is in a vicious circle of which the anæmia forms an important part. It would surely seem that in all cases in which the patient's life is in jeopardy, and which are not due to an essentially hopeless cause, great benefit might accrue from a drip transfusion designed to raise the patient's hæmoglobin to 100 per cent. and so break the vicious circle at at least one point. We have had a very good result in a severe case of puerperal sepsis whose hæmoglobin was down to 52 per cent.

Another very important indication for drip transfusion in this class of anæmia might be found in severely anæmic cases for whose cure a serious surgical operation is necessary—e.g., for the eradication of some extensive focus of septic infection or the removal of a growth. Restoration of the blood to normal as a pre-operative measure might conceivably mean all the difference between life and death. We have transfused several such cases.

The anæmias due to specific depression of the bone-marrow do not form a large group. There are first of all those due to injury to the marrow by a known agent such as lead, bismuth, benzol, arsphenamine, the rays of radium, and X rays—the secondary aplastic anæmias. Then there are those due to supposed depression of the marrow by an unknown agent—the primary aplastic anæmias. Whatever the cause, in severe aplastic anæmia there is no doubt but that at present blood transfusion is the only method of keeping the patient alive. There are recorded cases in which particular patients have been kept alive by an enormous number of repeated transfusions. For this type of case drip transfusion would seem the easiest and most efficient method of blood restoration. The patient might once a month have a drip transfusion for 24 hours restoring his hæmoglobin to 100 to 120 per cent. In this way, the lives and careers of individuals of value to the community might be perpetuated in a state of normal efficiency by the coöperation of a small phalanx of regular donors (say each giving his blood every quarter).

The important group of anæmias due to deprivation of the marrow of raw materials necessary to hæmopoiesis have been much studied and elucidated in the last decade. They will be found fully described and classified in monographs devoted to the subject. The main members of the group in this country are the iron-deficiency anæmias, especially nutritional anæmia of infants and achlorhydric microcytic anæmia of adults, and the hæmatinic factor deficiency anæmias of which pernicious anæmia is the great example. The results attained by liberally supplying the deficient hæmopoietic factors are so brilliant that large transfusions could only be indicated in very special circumstances. Such circumstances might be found when the patient's life is imperilled by some complicating acute infection, or when an urgent and severe surgical operation is necessary, or in a pregnant woman very near term. Under such conditions, drip transfusion might seem the ideal method of relatively quickly restoring the blood to normal and tiding over the emergency till the slower process of normal blood regeneration be satisfactorily established.

LOSS OR DESTRUCTION OF RED CELLS

The second main subdivision of the anæmic states concerns the anæmias due to excessive loss or destruction of red cells. Loss is due to bleeding, and, of course, the anæmias due to hæmorrhage are the most important group of all. Destruction is due to hæmolysis from various causes. The hæmolytic anæmias form a numerically much less important group.

In the immediate relief of anæmia due to acute bleeding, drip transfusion is not indicated, as the loss of blood volume does not preclude, but indeed calls for, relatively rapid transfusion. The only exception to this statement is that the drip method may be the most convenient for use when bleeding is very prolonged, because of its automatic and readily controlled nature. An example of such use was seen in our third case—a very extensive cranial operation. The drip was left running the whole time and required no handling beyond occasional adjustments of flow as the hæmorrhage fluctuated; in all 2700 c.cm. of blood was transfused. Although the drip may be run so slowly that a day may be taken to administer a pint, yet when occasion demands it may be speeded up to its full rate of a pint in three minutes. During the above case it was left running unattended while fresh donors were bled.

In anæmia due to subacute or chronic bleeding the indications for drip transfusion might be conditioned by a variety of circumstances. Thus in severe anæmia due to a readily arrested source of bleeding, such as piles, there seems to be no need for transfusion unless the patient's life is jeopardised by some complicating infection. On the other hand, in severe anæmia due to hæmorrhage whose arrest necessitates a major operation, drip transfusion would have one of its chief functions. The high mortality in recurrent hæmatemesis and melæna from peptic ulcer is well known, and the dilemma of having to choose between hoping the bleeding will stop in the morphinised patient, or operating to arrest it, too often results in death whatever the choice made. There seems no doubt that in such cases surgery would be the method of election if it could be made safe by preliminary relief of the exsanguination. Drip transfusion can achieve this aim and the patient be delivered to the surgeon with 100 per cent. hæmoglobin and accompanied to the theatre with the drip still running. We have done this in two cases. Again, in a severe operation, such as Wertheim's hysterectomy, the mortality is unquestionably higher when operation is performed on an already anæmic patient. Twenty-four hours delay for drip transfusion of several pints of blood might surely lower the death-rate figures in such cases.

The hæmolytic anæmias are a small group in this country, but in such conditions it is imaginable that drip transfusion might be a powerful therapeutic weapon, especially if the patient's life be menaced by urgent complications.

Discussion has been limited to the possibilities of continuous drip blood transfusion in the treatment of the anæmic states where the indications appear fairly clear. We are not unmindful, however, that the method might have value in conditions not essentially characterised by anæmia. Brilliant results from blood transfusion of the ordinary type have been recorded in almost every conceivable condition. It may be that in a not negligible fraction of these, cure was rightly ascribed to transfusion, and that failure of consistent confirmation of beneficial results has been due to under-dosage.

We wish to express our warm thanks to the members of the honorary staff of the Middlesex Hospital who have kindly allowed us to transfuse their cases and accorded permission to publish our results. We are indebted to the staffs of the Bland-Sutton institute of pathology and Courtauld institute of biochemistry for carrying out special investigations, and to our illustrator, Mr. S. A. Sewell, for his help. Without the extremely willing coöperation at all hours of the sister and staff of the main theatre this work could not have been done.

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SOME PROBLEMS OF INFLAMMATION RELATED TO SURGERY[*]

By Valy Menkin, M.D. Harvard
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THE fundamental mechanisms of inflammation are obviously of great interest to the surgeon. His constant contacts and the necessity of handling various types of pyogenic infections require on his part an intimate knowledge of the inflammatory reaction in all its known manifestations. I propose to discuss here some information gathered for the past few years concerning the relationship of inflammation to immunity.

Inflammation, broadly defined, is the complex vascular, lymphatic, and general tissue response to the presence of an irritant. The development of the inflammatory reaction consists of a series of dynamic and sequential changes which tend to localise and ultimately dispose of this irritant. It is with a study of some of these changes that we have been engaged.

Several years ago it was found that when a vital dye, trypan-blue, is injected directly into the subcutaneous tissues of a rabbit, the dye rapidly diffuses into the tributary lymphatics, so that if these regional vessels are cannulated, the lymph is stained intensely with the dye. If, on the other hand, the same dye is injected into a prepared area of inflammation induced by a chemical irritant such as aleuronat, the dye fails to penetrate to either the draining lymphatic vessels or the regional lymph node. The dye has evidently been fixed in the inflamed area. Furthermore, it was observed that there is an important time-relationship in this connexion.[1] The dye was found fixed as early as 30 minutes after the subcutaneous injection of aleuronat as an irritant. I shall refer to this fact later on and the importance of this early retention of foreign substances at the site of an acute inflammation will be pointed out. Subsequent experiments showed that intravenous injection of this dye is followed by a rapid accumulation of trypan-blue in the inflamed focus. Studies revealed that this accumulation is in part due to the increased capillary permeability in inflammation and also, as just pointed out, to the inability of the dye to drain outward into the regional lymphatics.

The extent of increased plasma filtration due to capillary injury and increased capillary pressure at a point of injury is open to quantitative measurements.[2] By means of a colloidal dye, it was shown that with certain inflammatory irritants the normal permeability of capillaries is increased about two-fold. Particulate matter which is unable to pass through the normal capillary endothelium readily passes through the lining of such channels in an inflamed area.[3]

These findings are applicable to micro-organisms. When bacteria, as *B. prodigiosus* or *B. pyocyaneus*, are injected into the circulating blood stream they localise and are recovered from foci of inflammation in greater numbers than from surrounding normal tissues. This was found by culturing inflamed skin areas and by comparing the number of colonies obtained with those recovered from corresponding normal cutaneous regions. Bacteria when injected directly into an area of injury are likewise fixed to have important applications in the treatment of both medical and surgical conditions. It is our conviction that blood transfusion is to-day exploited only to a very small extent of its potentiality, because it is still being employed in homœopathic doses. There is far from general realisation of the fact that a transfusion of 500 c.cm. to an adult does no more than augment his hæmoglobin by some 8 to 10 per cent. of its normal value. It is the more surprising that this valuable method of treatment is so feebly used when blood is easily and freely available everywhere.

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[*] Read before the clinical congress of the American College of Surgeons, Boston, Oct. 16th, 1934.

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The second main subdivision of the anæmic states concerns the anæmias due to excessive loss or destruction of red cells. Loss is due to bleeding, and, of course, the anæmias due to hæmorrhage are the most important group of all. Destruction is due to hæmolysis from various causes. The hæmolytic anæmias form a numerically much less important group.

In the immediate relief of anæmia due to acute bleeding, drip transfusion is not indicated, as the loss of blood volume does not preclude, but indeed calls for, relatively rapid transfusion. The only exception to this statement is that the drip method may be the most convenient for use when bleeding is very prolonged, because of its automatic and readily controlled nature. An example of such use was seen in our third case—a very extensive cranial operation. The drip was left running the whole time and required no handling beyond occasional adjustments of flow as the hæmorrhage fluctuated; in all 2700 c.cm. of blood was transfused. Although the drip may be run so slowly that a day may be taken to administer a pint, yet when occasion demands it may be speeded up to its full rate of a pint in three minutes. During the above case it was left running unattended while fresh donors were bled.

In anæmia due to subacute or chronic bleeding the indications for drip transfusion might be conditioned by a variety of circumstances. Thus in severe anæmia due to a readily arrested source of bleeding, such as piles, there seems to be no need for transfusion unless the patient's life is jeopardised by some complicating infection. On the other hand, in severe anæmia due to hæmorrhage whose arrest necessitates a major operation, drip transfusion would have one of its chief functions. The high mortality in recurrent hæmatemesis and melæna from peptic ulcer is well known, and the dilemma of having to choose between hoping the bleeding will stop in the morphinised patient, or operating to arrest it, too often results in death whatever the choice made. There seems no doubt that in such cases surgery would be the method of election if it could be made safe by preliminary relief of the exsanguination. Drip transfusion can achieve this aim and the patient be delivered to the surgeon with 100 per cent. hæmoglobin and accompanied to the theatre with the drip still running. We have done this in two cases. Again, in a severe operation, such as Wertheim's hysterectomy, the mortality is unquestionably higher when operation is performed on an already anæmic patient. Twenty-four hours delay for drip transfusion of several pints of blood might surely lower the death-rate figures in such cases.

The hæmolytic anæmias are a small group in this country, but in such conditions it is imaginable that drip transfusion might be a powerful therapeutic weapon, especially if the patient's life be menaced by urgent complications.

Discussion has been limited to the possibilities of continuous drip blood transfusion in the treatment of the anæmic states where the indications appear fairly clear. We are not unmindful, however, that the method might have value in conditions not essentially characterised by anæmia. Brilliant results from blood transfusion of the ordinary type have been recorded in almost every conceivable condition. It may be that in a not negligible fraction of these, cure was rightly ascribed to transfusion, and that failure of consistent confirmation of beneficial results has been due to under-dosage.

We wish to express our warm thanks to the members of the honorary staff of the Middlesex Hospital who have kindly allowed us to transfuse their cases and accorded permission to publish our results. We are indebted to the staffs of the Bland-Sutton institute of pathology and Courtauld institute of biochemistry for carrying out special investigations, and to our illustrator, Mr. S. A. Sewell, for his help. Without the extremely willing coöperation at all hours of the sister and staff of the main theatre this work could not have been done.

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SOME PROBLEMS OF INFLAMMATION RELATED TO SURGERY[*]

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The fundamental mechanisms of inflammation are obviously of great interest to the surgeon. His constant contacts and the necessity of handling various types of pyogenic infections require on his part an intimate knowledge of the inflammatory reaction in all its known manifestations. I propose to discuss here some information gathered for the past few years concerning the relationship of inflammation to immunity.

Inflammation, broadly defined, is the complex vascular, lymphatic, and general tissue response to the presence of an irritant. The development of the inflammatory reaction consists of a series of dynamic and sequential changes which tend to localise and ultimately dispose of this irritant. It is with a study of some of these changes that we have been engaged.

Several years ago it was found that when a vital dye, trypan-blue, is injected directly into the subcutaneous tissues of a rabbit, the dye rapidly diffuses into the tributary lymphatics, so that if these regional vessels are cannulated, the lymph is stained intensely with the dye. If, on the other hand, the same dye is injected into a prepared area of inflammation induced by a chemical irritant such as aleuronat, the dye fails to penetrate to either the draining lymphatic vessels or the regional lymph node. The dye has evidently been fixed in the inflamed area. Furthermore, it was observed that there is an important time-relationship in this connexion.[1] The dye was found fixed as early as 30 minutes after the subcutaneous injection of aleuronat as an irritant. I shall refer to this fact later on and the importance of this early retention of foreign substances at the site of an acute inflammation will be pointed out. Subsequent experiments showed that intravenous injection of this dye is followed by a rapid accumulation of trypan-blue in the inflamed focus. Studies revealed that this accumulation is in part due to the increased capillary permeability in inflammation and also, as just pointed out, to the inability of the dye to drain outward into the regional lymphatics.

The extent of increased plasma filtration due to capillary injury and increased capillary pressure at a point of injury is open to quantitative measurements.[2] By means of a colloidal dye, it was shown that with certain inflammatory irritants the normal permeability of capillaries is increased about twofold. Particulate matter which is unable to pass through the normal capillary endothelium readily passes through the lining of such channels in an inflamed area.[3]

These findings are applicable to micro-organisms. When bacteria, as *B. prodigiosus* or *B. pyocyaneus*, are injected into the circulating blood stream they localise and are recovered from foci of inflammation in greater numbers than from surrounding normal tissues. This was found by culturing inflamed skin areas and by comparing the number of colonies obtained with those recovered from corresponding normal cutaneous regions. Bacteria when injected directly into an area of injury are likewise fixed in situ precisely as in the case of the vital dye described previously, and these micro-organisms fail to disseminate to the tributary lymphatics as readily as they do under normal circumstances. The frequent localisation of bacteria from the blood stream in a *locus minoris resistentiæ* after preliminary trauma or other injury to tissue is well known to pathologists and clinicians. Osteomyelitic conditions are the common consequences of such preliminary injury. My observations on the accumulation of bacteria in an inflamed area from the circulating blood stream may explain the mechanism of this phenomenon in terms of increased capillary permeability with subsequent accumulation and fixation of bacteria at the point of injury.[3]

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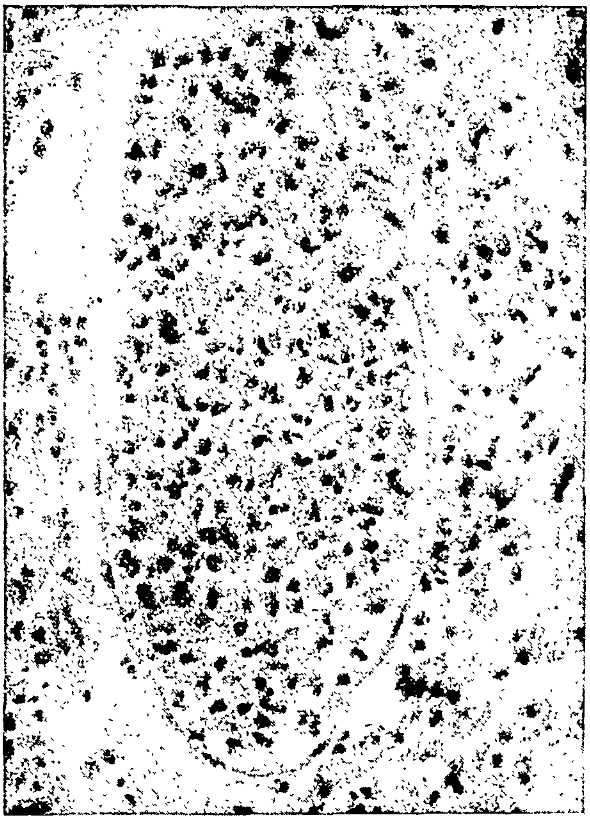
[*] Read before the clinical congress of the American College of Surgeons, Boston, Oct. 16th, 1934.



A thrombosed lymphatic vessel in a zone of inflammatory infiltration.

"FIXATION"

The mechanism of fixation whereby foreign substances or bacteria fail to disseminate readily from an acutely inflamed focus is referred to an obstructive barrier in the form of thrombosed lymphatics and coagulated plasma in tissues distended with œdema.[4] Time does not permit description of the various experiments to substantiate this concept. The important evidences will be mentioned briefly.

In the first place phagocytosis does not play a significant rôle in the reaction of fixation. This phenomenon occurs so early after the introduction of an irritant that there are still relatively few leucocytes present at the time. Furthermore, microscopic studies at this period fail to reveal any trace of the phagocyted material tested. Yet these foreign substances are prevented from reaching the regional lymph nodes.

Microscopic examination of such acutely inflamed areas reveals a tissue distended with coagulated plasma. The presence of a fibrinous meshwork forms a conspicuous feature of the injured part. Careful observation of small vessels invariably brings to view many of the lymphatics either completely or largely occluded by thrombi consisting of a delicate fibrinous reticulum. In the later stages of the reaction, many leucocytes are found embedded in its meshes (see Figure).

Subsequent experimental evidences substantiated this concept of mechanical obstruction to account for the inability of foreign substances or bacteria to disseminate from an inflamed focus. For instance, it was reasoned that if this were the case, a testing substance, such as a dye or bacteria, would, when injected at the periphery of an inflamed area, fail to enter it. This was found to be the case.

The concept of mechanical obstruction was further established by a chemical test. Concentrated urea in vitro prevents the coagulation of blood, owing to its protein solvent action on fibrin. Preformed fibrin also tends to go into solution fairly readily in the presence of a sufficiently concentrated solution of urea crystals. When this substance is injected into a rabbit simultaneously with an inflammatory irritant, the reaction of fixation is inhibited. In such experiments the lymphatics are found unoccluded by thrombi, thus adequately accounting for the free drainage of substances from the inflamed area.[5]

INVASIVE POWERS OF PYOGENIC ORGANISMS

The foregoing observations have offered a means of studying the mechanism to account for the differences in the invasive ability of various pyogenic organisms. The importance of such a study requires no special emphasis.

The intensity and rapidity with which an inflammatory irritant is circumscribed in a tissue area varies with the type of irritant. The speed with which an irritant causes a region to be walled-off by mechanical obstruction in the form of thrombosed lymphatics or a fibrinous network or both is necessarily an important index in determining its ability to disseminate ultimately into the circulating blood. This holds true if the irritant, per se, can readily drain through lymphatic vessels from the site of inoculation. That bacteria disseminate from the site of inoculation through lymphatics has often been demonstrated. It follows from this that if bacteria are employed as inflammatory irritants some information may be obtained concerning the invasive capacities of different micro-organisms. This would depend on the type of inflammatory reaction which a given micro-organism induces in the host. Pathologists and surgeons are familiar enough with the localising tendency of staphylococcus in contrast to the invasive property of the streptococcus. Can the behaviour of various pyogenic organisms in tissues be related at least in part to their respective abilities of creating an early inflammatory reaction at the site of their inoculation which would tend to prevent, by the mechanism previously described, their dissemination to the tributary lymphatic nodes? It has been pointed out in a previous communication that when a vital dye is introduced into an area at various intervals of time after bacterial inoculation of this site, the degree of walling-off of the infected focus may be determined by the extent to which the dye can drain into the regional lymphatics or, for that matter, ultimately into the blood stream. This method can perhaps be used as a clinical test to determine the patency of lymphatics, or, in other words, the degree of walling-off of an area of inflammation such as a pyogenic abscess or an inflammatory reaction in a cavity, whether the peritoneal, pleural, or joint cavity.

The observations presently to be described represent a comparison of three pyogenic cocci: *Staphylococcus aureus, Streptococcus hæmolyticus*, and Type I. pneumococcus, with regard to the rapidity of retention of trypan-blue at inflammatory foci induced by these respective organisms.[6] The significance of such data in regard to an understanding of the invasive properties of these micro-organisms will be pointed out.

When trypan-blue is injected into the skin of a rabbit immediately after the inoculation of *Staphylococcus aureus*, the dye readily diffuses to the regional lymphatics. If, however, an interval of only one hour elapses between the injection of the bacterial irritant and that of the dye, the latter fails to drain into the lymphatics. An area of inflammation induced by the staphylococcus organism becomes evidently very rapidly circumscribed. Microscopic studies fully substantiate this fact, for lymphatic lumina are found occluded by fibrinous thrombi. In many areas the injured tissues are distended by coagulated plasma.

In the case of Type I. pneumococcus, the dye fails to reach the lymphatic nodes until a somewhat later stage—i.e., about six hours after the inoculation of the micro-organisms. Here again this observation is correlated by the finding of occluding thrombi in lymphatics. It is of interest to note the absence of fibrin in the extra-capillary spaces of the skin of these infected rabbits.

The prompt walling-off response on the part of staphylococcus is contrasted by the delayed reaction of fixation in the case of the hæmolytic streptococcus. When these organisms are inoculated into the cutaneous tissues of rabbits, trypan-blue freely drains from the site of bacterial inoculation to the regional lymphatic vessels for almost two days. Throughout this period the lymphatics are patent, as evidenced both by their normal functioning and by the distended and almost unoccluded state of their lumina. About 45–50 hours after the initial inoculation of the streptococcus, microscopic examination reveals plugging of lymphatics by dense leucocytic thrombi. At this time the area of inflammation is effectively circumscribed, for trypan-blue injected into such an area is fixed and is unable to drain to the regional lymphatic nodes. These observations present an interesting paradox. Staphylococci produce in general little systemic effect owing to their intense local injurious reaction which fixes them in situ. Streptococci produce profound generalised effects on the organism as a whole because of their comparatively mild local reaction which allows them a relatively free penetration to the essential organs.

It is improbable that the interesting observations of Tillett and Garner on the fibrinolytic activity of hæmolytic streptococci can offer an adequate explanation for this delayed fixation of trypan-blue.[7] Their own findings definitely show that this lytic effect fails to take place with the plasma clot of the rabbit which was the animal used in our studies. It is more likely that in the case of human streptococcal infection the dissolution of fibrin acts as a synergistic agent to a more fundamental factor which holds true for both human and rodent types of infection.

Studies now in progress support this point of view. The Berkefeld filtrates of several-day-old broth cultures of *S. aureus* induce an acute inflammatory reaction in the skin of rabbits which promptly causes retention of trypan-blue. The reaction is essentially indistinguishable from that obtained when the micro-organisms alone are injected. Heating the filtrate to 58° C. for about one hour destroys the principle responsible for the reaction. The filtrate of a 24-hour culture is ineffective, whereas the 1-day-old culture of the organisms produces perfect walling-off of the inflamed area. This indicates that the *S. aureus* owes its necrotising activity (which doubtless is an important factor in its ultimate localisation) not merely to its presence per se, but in addition also to its ability to release a powerful exotoxin-like product. This soluble toxic, thermolabile material is capable of inducing sufficient capillary and lymphatic damage to produce a shunting off, so to speak, of the inflamed area. There is some evidence that this material is identical with or at least resembles in many respects staphylococcus leucocidin. The filtrates of hæmolytic streptococci and of Type I. pneumococcus are utterly unable to induce any such response. The dye penetrates from such inflamed areas to the regional lymphatics even as late as 50 hours following the inoculation of streptococcal filtrates. The filtrates of these latter micro-organisms are evidently entirely innocuous.[8]

CONCLUSION

I have called attention to the rôle of the inflammatory reaction in immunity and thereby its relation to some problems in surgery. Powerfully necrotising irritants produce as a result of an increase in capillary permeability and of lymphatic damage an extremely prompt reaction, perhaps best termed fixation. By this process, consisting in the rapid formation of a network of fibrin and of thrombi in lymphatics, the area of injury is mechanically circumscribed and the dissemination of the irritant is prevented. *S. aureus* is an example of such a bacterial irritant. Aleuronat is a chemical irritant of similar potency. Mild irritants, on the other hand, produce only a delayed reaction, thus allowing relatively free penetration of the irritant into the circulation for a considerable interval of time. Occlusion of the draining lymphatics in such instances often takes place as late as two days subsequently to the inoculation of the irritant. Hæmolytic streptococci exemplify this type of irritant. Another instance has been recently demonstrated by McMaster and Hudack who showed that for 24–48 hours following a mere skin incision or a mild burn, lymph drainage is increased. Subsequently the rate of flow is diminished.[9]

In relatively large suppurating or acutely inflamed areas the reaction of fixation may occur as early as 30 minutes after the injection of an irritant. This prompt response allows a definite interval of time for the relatively sluggish leucocytes to assemble for phagocytosis at the site of inflammation. The polymorphonuclear cells appear first and are displaced subsequently by the macrophages. This cytological sequence, as recently demonstrated in this laboratory, is apparently conditioned by changes in the local hydrogen-ion concentration.[10] The reaction of fixation by circumscribing the irritant in the earliest phase of the acute inflammatory reaction plays a definite rôle in immunity, for it protects the organism at the expense of local injury. The reason for the disastrous effects resulting from untimely surgical interference with such an effective inflammatory barrier, as described above, and which is encountered, for example, in the staphylococcus or the anthrax carbuncle, is obvious and needs no further comment in view of the foregoing discussion.

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AN ARM-BATH AT RISING TEMPERATURE

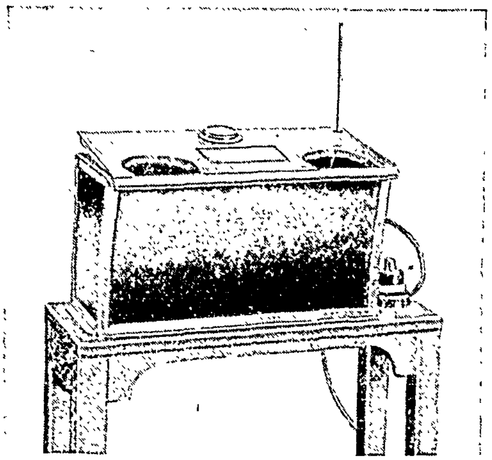
FOR RELIEF OF VASCULAR HYPERTENSION*

By R. Fortescue Fox, M.D., F.R.C.P. Lond.

Partial baths at temperatures plus or minus to the body have been used for many years. *Cold* Sitz baths, douches, and packs with frictions formed a great part of the empirical "hydropathic" system in the last century. The local application of *heat*, sometimes at increasing temperature, is an old practice, especially in Germany, and hot foot-baths have been long employed for hypertensive and nervous affections, bronchial irritation, and asthma at some of the French spas.

Schweninger, whose help in "maintaining his health for two decades" is acknowledged in Bismarck's "Recollections," appears to have been the first, in the early 1870's, to make use of local baths of increasing temperature in a systematic manner in the treatment of general diseases. Disorders of the heart and circulation, congestive abdominal conditions, fever, and other illnesses were treated by him in this way. Since his time the rationale of the general reaction which follows local stimulation has been experimentally demonstrated. A fact of common experience has received its proof although its therapeutic implications are still to a large extent unrealised. It has been shown, for example, by means of the plethysmograph, that if one arm is treated with increasing heat the volume of the *untreated* arm increases, that is to say, the vascular dilatation in one limb is accompanied by a general dilatation over the surface of the body—a "con-sensual reaction," according to the terminology of Brown-Sequard. In other words, it is impossible to confine the effect of heat to the part to which it is applied, and the same is true, to a less extent, of cold and mechanical stimuli.

Following Schweninger, Hauffe[1] has made a series of clinical and experimental studies in Berlin of the effects of partial baths on the circulation, and his conclusions are of much interest and originality. He divides local stimuli into two classes, according to their physiological effects: (1) *sudden or sharp stimuli*, whether by cold in any form, or by heat, or mechanical (by pinching, friction, or movement); (2) *slowly rising stimuli.* Of this class the only definitely active increasing stimulus is that of heat; slowly increasing movements are uncertain in their effects. The plethysmographic curve falls after all forms of sudden stimulus, but rises steadily with the stimulus of slowly increasing heat. It has been clearly shown that this form of local-heat-stimulus brings about a definite general reaction: progressive vasodilatation, increased circulation in the capillaries and veins, and changes in the distribution of the blood. The vasodilatation is believed to affect not only the skin and subcutaneous tissues, muscles, and bones, but also the liver, spleen, bronchial tubes, and coronary vessels. That is to say, the "internal peripheral" circulation is modified and increased by heat applied externally to a single limb. To make this possible the blood is drawn to the outward parts from a central area or reservoir, which includes the cardiac cavities, the pulmonary circulation, and the large arterial trunks and branches up to their entry into the organs. An overstrained heart may thus be relieved by gradual displacement of the blood mass from the reservoir to the outward districts, without effort on the part of the heart but solely by direction of its energy to the altered peripheral surfaces. The pressure of the blood proportionately decreases as the surface of the body increases, and an increase in the surface circulation diminishes the cardiac burden. With this may be compared the effect of sudden hot or cold stimuli, which should always be avoided when the heart is embarrassed.



The arm-bath

The rising foot-bath is recommended only for robust subjects, the arm-bath being also preferable from the extent and proximity of the surface operated on. The relation of skin areas to organs and functions should not be overlooked. In partial baths of rising temperature the technique, duration, temperature, as well as exact observation of the extension of the reactions on the surface of the body, are of great importance.

The late Dr. Anton Lieven[2] recently summarised a long experience in this method of treatment at Aachen.

> In his practice the three following types of cases showed good results: (1) residual articular rheumatism after rheumatic fever, with or without valvular lesions or myocarditis; (2) rheumatoid or osteo-arthritis with hyperpiesis; (3) Bauer's syndrome or "high-pressure rheumatism," that is, pseudo-rheumatic symptoms in the soft tissues, disappearing when the blood pressure is reduced. If arterio-sclerosis was not far advanced, marked lowering of tension was often observed—e.g., from 220 to 170. Young patients were commonly given from three to four weeks of nearly daily baths. In older people the temperatures and intervals varied with the reaction. But in all cases he found that, properly given, the arm-bath relieved rather than put any strain upon the heart. Hans Behrend has also put on record a similar experience at the hydrotherapeutic clinic of the University of Berlin.[3]

The bath here figured, the first of its kind in England, differs in some respects from the German model. It has been made, to my design, by Charles Hearson and Co., Bermondsey, for Dr. Mary Nicol, of Southend. Both the arms are here immersed in a single bath at about blood heat. The water is gradually warmed by an electrical resistance, giving a uniform augmentation of heat in unit time of 1° F. per minute, measured by rototherm and mercurial thermometers. Thus a bath of 12 to 20 minutes' duration would begin at 100° and finish at 112° or 120°. I am not competent to express an opinion on the physiological hypotheses that have been put forward to explain its action. But I can state that my own preliminary observations in cases of vascular hypertension show a fall in both systolic and diastolic pressure after a single bath, amounting sometimes to 5–15 mm. in the diastolic reading. The systolic reading appears to me of less importance. The reduction of pressure is believed to last for 2–6 hours. The local heat causes little or no discomfort, but some flushing and general perspiration. Pain and breathlessness, if present, are relieved. It seems to be a safe and effectual method of producing, at all events temporarily, a general peripheral dilatation. I should anticipate that, with suitable technique, augmenting heat will be found of especial value in the common variety of high blood pressure, which shows periodical "crises" or "waves"[4, 5] of vascular hypertension; and probably also in many chronic conditions (rheumatic and otherwise) with "poor circulation," angiospasm, subnormal temperature, Raynaud's disease, or chilblains.

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* Demonstrated at a reception given by the International Society of Medical Hydrology and the British Health Resorts Association at the Institute of Hygiene on March 15th.

In any case, I hope that the claims advanced will be put to the test by medical men having the opportunity of more extended observation, both at the spas and at clinics for physical treatment. Whether the vasodilatation produced by a course of treatment is maintained remains to be proved, but the risks of paroxysmal hypertension are so considerable that even temporary or partial relief should be welcomed.

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SKIN SENSITIVITY TO BICHROMATE

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In December, 1932, a boy aged 16 came to the out-patient department of the Dunedin Hospital suffering from dermatitis of the flexor surfaces of both forearms. Since March, 1932, he had been employed by a fur-coat manufacturing firm, where his work was to damp dyed rabbit skins with water applied with a brush. He was well till November, when an irritable papular rash appeared on the flexor surfaces of both wrists; it did not yield to the treatment he used, and it spread up the forearms, so he sought advice at the hospital.

The dermatitis was of a papulo-squamous type with vesication and exudation of serum in places, and extended from wrist to elbow on the flexor aspects of both arms; the skin was reddened and deeply infiltrated. Sedative lotions were prescribed and he continued at work, but as the condition of the skin became worse he was admitted to hospital on Jan. 24th, 1933.

At this date the dermatitis was widespread, affecting the exposed surfaces of his neck and chest and the legs below the knee, while the inflammation on the arms had become more acute, and extensive areas of ulceration were present. In addition, there was severe blepharitis and his nose was obstructed and discharged serum. The acuteness of the dermatitis was quickly subdued by ordinary treatment, and on Feb. 18th he was discharged from hospital. Three months elapsed, however, before the rash and the nose and eye symptoms had completely disappeared. In June he resumed work, but within a fortnight a complete relapse occurred and he was obliged to abandon his employment.

SEARCH FOR THE CAUSE

It was now clear that the dermatitis was of the occupational variety and a search for the causal agent was begun. Samples of furs were obtained from the factory and patch tests were made by applying patches 1 in. square to the patient's skin for 24 hours. Severe reactions were induced by rabbit fur, dyed to imitate seal, and these were more intense when the under-surface of the pelt was applied to the skin. In control tests this pelt induced no reaction on normal persons.

We now obtained from the dyers samples of this fur in different stages of manufacture and patch tests were made. The results were as follows:—

Untreated rabbit skin	negative.
Rabbit skin after tanning and dressing ..	
,, ,, ,, "tipping"	
,, ,, ,, "dipping" (finished fur) ..	+ + +

In the "dipping" process the pelts, after mordanting in a bath of bichromate, are dyed by immersion in a solution of hydrogen peroxide and Ursol D. As ursol D—paraphenylene diamine—has been found to be the causal factor in many cases of fur dermatitis we assumed that it was operative in this case; but no reaction followed the application of ursol D to our patient's skin.

We next obtained from the dyers samples of all the dyes they had in stock, which comprised ursol D, base 1, ursol DB, ursol P, ursol DF, ursol 2G, and ursol SK. (Both ursol D and base 1 are trade synonyms for paraphenylene diamine.) Each of these dyes was applied in 1 per cent. solution on cotton-wool, but no positive reaction was obtained.

Thinking that the reaction must be due to either some combination of the rabbit skin with the dye, or to partially oxidised compounds formed during dyeing, we dyed portions of rabbit pelt with all the above-mentioned dyes. None gave a positive reaction. Next, a sample of fur "tipped" with aniline black was finished by mordanting with bichromate, and then dyeing with ursol D. This piece, identical with the factory product, induced no reaction. Two pieces of rabbit skin, which had been mordanted and washed only, gave a positive reaction. Rabbit pelt mordanted and well washed gave an indeterminate reaction. Cotton-wool and mordanting solution induced an intense reaction. These results may be tabulated thus:—

"Seal tipped" mordanted with bichromate and dyed with ursol D	neg.
"Seal tipped" mordanted with bichromate and rinsed	+
Plain rabbit mordanted with bichromate and rinsed	+
Fresh sample of "rabbit dyed seal" from dyers	+ + +

A further test gave the following results:—

Rabbit pelt mordanted and well washed ..	±
Cotton-wool and mordanting solution ..	+ + + +

These tests show clearly that the reaction induced by the finished factory product was due to traces of bichromate in the pelt. An extract of the pelt made by soaking for six hours in cold water gave the following results:—

0·1 c.cm. extract of pelt	+ +
0·1 c.cm. extract of pelt reduced by the addition of bisulphite	neg.
0·1 c.cm. of 1 in 10,000 solution pot. bichromate ..	+ +

It was estimated that 0·21 mg. of potassium bichromate was extracted from each square inch of pelt. On inquiry

we learnt from the dyers that the furs are given a final treatment by brushing with a solution of bichromate. This dries on the fur, and in the subsequent handling some of the dry powder is rubbed off and becomes fixed to the porous under-surface of the pelt.

LIMITS OF PATIENT'S SENSITIVITY

The limiting amount of bichromate giving a reaction on external application was determined by applying 0·1 c.cm. amounts of the different solutions on lint for 24 hours. The results are set out in Table I.

TABLE I

Concentration of solution of $K_2Cr_2O_7$.	Amount of $K_2Cr_2O_7$ in 0·1 c.cm. millionths of a gramme = 1.	Amount of chromium in 0·1 c.cm.	Reaction after 24 hours.
1 in 10,000	10	3·5	+ + +
1 in 30,000	3·3	1·2	+
1 in 100,000	1	0·35	±
1 in 1,000,000	0·1	0·035	—

The sensitivity to intradermal inoculation was also determined by injections of 0·1 c.cm. (Table II.).

TABLE II

Concentration of $K_2Cr_2O_7$.	$K_2Cr_2O_7$ in 0·1 c.cm.	Chromium in 0·1 c.cm.	Reaction.
1 in 100,000	1	0·35	+ + +
1 in 1 million	0·1	0·035	+ +
1 in 3 millions	0·033	0·012	+ +
1 in 10 ,,	0·01	0·0035	+
1 in 30 ,,	0·0033	0·0012	+
1 in 100 ,,	0·001	0·00035	±
1 in 500 ,,	..	..	—
1 in 1000 ,,	..	..	—
Saline	..	..	—

The smallest amount of bichromate giving a definite positive reaction was one three-hundred-millionth of a gramme = 3×10^{-9} g. containing $1{\cdot}2 \times 10^{-9}$ g. of chromium.

Where positive reactions were obtained a redness was observed within four hours of the injection, increasing to a maximum in about eight hours, and at this time some irritation was felt. In about 24 hours fine vesiculation ensued producing a roughness of the skin which persisted for as long as a fortnight after the injections.

SPECIFICITY OF REACTION

Positive reactions have only been obtained with solutions containing chromic acid or its salts. Chromic sulphate and other compounds of trivalent chromium were quite inert, as were solutions of chromates after treatment with reducing agents, such as sulphur dioxide, which reduce chromic acid. The patient was not found to be more sensitive than normal to other irritant substances, the reaction due to formalin solution diluted 1 in 4 being no greater than that in a normal person.

A year later the patient's sensitivity was again determined by intradermal inoculation with the results seen in Table III.

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Concentration $K_2Cr_2O_7$.	Reaction.	Concentration $K_2Cr_2O_7$.	Reaction.
1 in 100,000	+ +	1 in 30 millions	±
1 in 1 million	+	1 in 100 ,,	—
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1 in 10 ,,	+		

There appeared to be a slight reduction of sensitivity, the lowest concentration giving a marked reaction being now 1 in 10 million as compared with 1 in 30 million a year before.

The conjunctival reaction was tested but no reaction was obtained with one drop of any of the solutions tested, ranging from 1 in 300 million to 1 in 30,000.

Two attempts at passive transfers were made. In the first, the patient's serum, not inactivated, was injected in amounts of 0·2 c.cm. into one of us (H. D. P.). The injections were followed within five minutes by a marked reaction consisting of irritation with the formation of a central white raised area 1·5 cm. in diameter surrounded by a marked redness. The reaction reached a maximum in half an hour and had practically subsided in three hours' time. The injection of 0·1 c.cm. of 1 in 10,000 bichromate into the serum area was painful owing to the previous irritation, but was not followed by any reaction. A 1 per cent. solution bichromate was also applied externally on cotton-wool to a second serum inoculation, and again no evidence of transfer was obtained.

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In the other test (C. E. H.) a 1 in 10,000 solution of bichromate was used as antigen as 1 in 1000 bichromate was found to be painful on injection. There was no reaction and no evidence of transfer.

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It has long been known that workers exposed to chromic acid and its salts develop ulcers and rashes, some people being more susceptible than others. Joules [1] reports a case of asthma from sensitisation to bichromate. The skin of this patient was sensitive to a solution of one grain of potassium bichromate in 25 minims, and injection of gr. 1/25 $K_2Cr_2O_7$ brought on asthmatic symptoms. Smith [2] has reviewed the literature respecting allergic reactions to chromates, and reports a case, with asthma and allergic manifestation, sensitive to 1 per cent. ammonium bichromate in the patch test. After 24 hours there was erythema followed by vesiculation in three days. Intradermal injection of 0·1 c.cm. of 0·5 per cent. ammon. bichromate produced a marked local reaction and a lighting up of distant areas. Humphrey and Phillips [3] found small quantities of chromate extractable from some leathers. Dr. Cox, discussing the paper, said the quantities were small, not exceeding 1 mg., and did not think this would cause dermatitis to anybody.

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The mechanism of sensitisation to a simple inorganic substance like chromic acid remains obscure. As in previous experiments, our attempt to secure passive transfer failed. The reaction shown with the patient's serum in our first trial is of particular interest, since a similar reaction was demonstrated by previous experimenters. We cannot, at present, say whether failure to obtain this reaction in our second experiment was due to previous inactivation of the serum.

SUMMARY

A case showing a high degree of specific sensitisation to chromates is reported. A definite skin reaction was obtained with 0·000,0033 g. of potassium bichromate applied externally, and with 0·000,000,0033 g. on intradermal inoculation. Attempts at passive transfer yielded negative results.

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Clinical and Laboratory Notes

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By E. H. W. DEANE, M.B. Melb.
ASSISTANT MEDICAL SUPERINTENDENT, WRIGHTINGTON HOSPITAL
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Y. Z., a mill operative aged 22, had had left-sided pneumonia three years previously. The illness lasted a fortnight and left him with a chronic cough, and he did not regain his strength. The cough and weakness persisted for two and a half years, but apparently the chest was not re-examined. Four months before admission to the Wrightington Hospital a swelling appeared in the left loin; it was recognised as an abscess and incised twice, and the diagnosis of perinephric abscess made. The chest condition being discovered at the same time was regarded as secondary to the perinephric infection. There had been no disturbance of renal function. The patient was then admitted to hospital and was found to be a pale-looking youth with two sinuses (incisions) discharging profusely in the left loin below the 12th rib. He ran an irregular evening temperature of 101–102° F. He had conspicuous clubbing of the fingers; the left side of the chest was flattened, with poor air-entry; and there were all the physical signs of a large effusion in the lower half. There was no deformity or tenderness of the spine suggesting a vertebral origin of the infection, and this was confirmed radiologically; nor was any urinary abnormality detected, or radiographic abnormality of the renal tracts.

X ray examination of the chest showed a large fluid opacity with horizontal upper level extending as high as the 2nd rib in front. This pleural effusion was evacuated through an aspirating needle passed through an intercostal space, and the pleural cavity was washed out with eusol solution. At the completion of this operation 20 c.cm. of a 2 per cent. solution of mercurochrome was introduced through the needle into the pleural cavity, and next day the discharge from the sinuses was coloured with this dye —proving the connexion with the empyema. The aspirated pus was found to contain many disintegrating polymorph leucocytes, staphylococci, and streptococci, but no tubercle bacilli were seen either in films or after guinea-pig inoculation. Eusol washing-out was repeated at two-day intervals and the discharge from the sinuses became much less. After about a week it was found possible to pass a rubber catheter through one of the sinuses into the empyema cavity and to carry on with the eusol washing by this route. This treatment was then continued daily until a month after the patient's admission, when the fluid from the empyema became clear and serous; active treatment was then discontinued and the sinuses rapidly closed, and have remained closed since.

During treatment the patient lost all trace of cough, and radiography before discharge from hospital showed that the lung had almost completely expanded and filled the chest except for a small opaque area in the costophrenic angle. The weight in two months increased by 17 lb. and the blood sedimentation index improved from 32 to 12 mm. (Cutler's method).

It seems almost certain that in this case the empyema had been present since the attack of pneumonia three years previously; that it was of long standing seemed probable from the flattened state of the left side of the chest. An empyema persisting for so long usually leads to considerable thickening of the pleura, and this may prevent re-expansion of the lung, so that surgery is required either to permit re-expansion or to collapse the chest wall in order to obliterate the pleural cavity. The fact that simple aspiration followed by eusol irrigation has allowed of re-expansion in a case of such long standing is an additional reason for the present report. A similar successful result after aspiration has been recorded by Khan.[2]

I am indebted to Dr. E. H. Allon Pask, medical superintendent of Wrightington Hospital, for permission to publish these notes.

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WITH RE-EXPANSION

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Originally it was thought to be that of a mediastinal effusion or even pleural thickening.[1] It was subse-

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1 in 30,000 ..	3·3	1·2	+
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The sensitivity to intradermal inoculation was also determined by injections of 0·1 c.cm. (Table II.).

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Concentration of $K_2Cr_2O_7$.	$K_2Cr_2O_7$ in 0·1 c.cm.	Chromium in 0·1 c.cm.	Reaction.
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oxygen had no curative effect on tuberculosis, and partly because its prolonged use tended to produce anæmia. *Paroxysmal dyspnœa* was another type met with, in which the attacks resembled the "cardiac asthma" of elderly non-tuberculous subjects. This was really due to left ventricular failure, and was accompanied by an increased blood flow through the heart. Both morphia, as Clifford Allbutt had shown, and oxygen had been found of benefit in this condition, but the speaker described the mechanical apparatus devised by J. Plesch, which he suggested was better than either, and which was successful in treating pulmonary œdema with "rattling" expiration. Another type of dyspnœa was due to *anæmia.* In this connexion Dr. Poulton drew attention to the metabolic stimulation of cold. In Alpine resorts the rarefied atmosphere, with its reduced oxygen pressure, stimulated blood formation. He could think of no more fruitful scheme for research in this country than to build a room in which the pressure of the oxygen could be diminished and the air could be conditioned, so that the treatment by diminished oxygen pressure and by cold could be simultaneously investigated.

Dr. R. HILTON said that in spontaneous pneumothorax there was arterial anoxæmia and CO_2 retention. The pressure in the pleural cavity he had measured and found as high as 10 cm. of water. He gave evidence to show that not only was there a venous short circuit, but there was also interference with the veins entering the heart, through the displacement of the mediastinum. In artificial pneumothorax the circulation rate, at first slightly raised, was definitely slowed down after a certain pressure was reached. Tuberculosis itself did not necessarily alter the blood gases, but with advanced lesions anoxæmia occurred. This was removed by artificial pneumothorax. Dr. Hilton showed that artificial pneumothorax did not immobilise the lung. He discussed why tuberculous dyspnœa was sometimes relieved by this measure through its action on the body temperature, the toxæmia, and on the anoxæmia when this existed. He reviewed briefly some of the work on nerve reflexes from the lung, and suggested that whereas true dyspnœa was central and chemical, the cause not always being reflected in the peripheral blood, tachypnœa was peripheral and mechanical through changes in lung tissue.

Dr. W. STOBIE remarked that like every other organ in the body, the respiratory centre required for its functioning an adequate supply of normally healthy blood and nervous energy. Contrary to the statement appearing in many text-books, dyspnœa was not common in early tuberculosis, and when present it was usually due to some other unrelated factor, or to some complication such as pleurisy, spontaneous pneumothorax, or an extension of the disease in the other lung. In cases due to pleurisy, the injection of air between the layers of the pleura to relieve the pain and the dyspnœa had the additional advantage of leaving a space for a future induction of A.P. There were, however, two groups of early cases in which spasmodic dyspnœa simulating bronchial asthma was a well-defined feature. In the first group, with few or no physical or radiological signs but with positive sputum, the presence of caseous root glands might be suspected, with a subsequent rupture into a bronchus. Adrenaline or ephedrine would give rapid relief in these cases. In the other group the "asthmatic" condition might be the result of hypersensitiveness to the tuberculo-protein circulating in the blood. Here desensitation might be possible, combined with the judicious use of tuberculin over a prolonged period. In old fibrotic cases, dyspnœa was of course one of the commonest and often the main symptom; and the main essential in treatment was obviously the cutting down of the patient's activities, thus lessening the demands on the lung. In the terminal stages of the disease, oxygen and CO_2, also Felsol powders, might give relief. Toxic dyspnœa was an indication for collapse therapy. Dyspnœa from the presence of effusion in artificial pneumothorax treatment would usually call for removal of the fluid, and in cases with unduly mobile mediastinum replacement with gomenol instead of air should be considered. When the dyspnœa was due to circulatory rather than to pulmonary causes, collapse therapy was contra-indicated.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society was held in Manchester on April 12th, with Mr. A. GOUGH, the president, in the chair.

Involution of the Uterus

Dr. E. A. GERRARD reported his investigations on uterine involution in the rabbit. In the past, he said, the blood-vessels of the involuting uterus had received little attention compared with the musculature and endometrium. Fatty degeneration had been described as one of the stages of involution but this was probably due to the pathological nature of the material investigated. It appeared that Goodall stood alone in his contention that new vessels are formed within the old ones. As for involution of the muscle cells it was attributed by some authorities to granular atrophy and by others to fatty degeneration. Study of involution in human beings was difficult because of the lack of suitable material, and Dr. Gerrard had therefore investigated it in rabbits killed during the involution and superinvolution periods. In these animals it was found that when the uterus contracts after delivery the lumen of the blood-vessels becomes smaller and the walls are thickened. The muscle fibres are reduced in size by a process of granular atrophy, a considerable amount of its protoplasm being absorbed, but no fatty changes are demonstrable. Involution of the musculature is complete by the ninth day. In the arteries, owing to irregular projections into the lumen, and organisation of the peripheral clots, the intima becomes thickened and the internal elastic lamina appears to be displaced outwards. The internal elastic layer assumes a laminated appearance. With lactation, superinvolution occurs and there is an increased deposition of elastic tissue, especially evident round the veins. Superinvolution is characterised by delay of the granular atrophy of the fibres both of the myometrium and the arterial muscular coats.

Dr. K. V. BAILEY asked whether there was any evidence to show where the elastic tissue originated.—Mr. T. N. A. JEFFCOATE (Liverpool) said that it was interesting that so much elastic tissue should be described as present in super- and sub-involution, and asked how Dr. Gerrard had estimated the amount. He doubted whether there was actually any change in the elastic tissue and thought that the quantity remained constant.—Mr. M. DATNOW (Liverpool) referred to the changes which normally take place in the rabbit uterus at the advent of pregnancy and divided them into those which depended on a constitutional stimulant such as œstrin and progestin, and those which were purely local. He thought that involution was a process of degeneration and absorption. There was a sudden collapse of the whole uterus with interference with its blood-supply, leading to degeneration of the tissues of the uterine wall. He also had never seen fatty degeneration during the process of involution. He felt that Goodall's statement should be reviewed in the light of modern knowledge of hormones.

In reply, Dr. GERRARD said he thought the elastic tissues were derived from connective tissue cells. Examination of the slides left no doubt that there were differences in the amount of elastic tissue in super- and sub-involution.

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These examples illustrate the main burden of the book: disease as a dynamic contest between invader and defender. It is no new theme, and the author does not pretend to have included the very latest ideas, but the argument is illustrated by such a wealth of material that it provides fascinating reading—not sufficiently technical perhaps for the specialist in bacteriology, and demanding rather too much knowledge for the "student body not yet conversant with the problems of disease" for whom the lectures were primarily intended, but most stimulating for the general medical reader. The last chapter gives a brief but vivid history of the utilisation of bacteriological discoveries in the treatment and prevention of disease—largely a history of the homeric years during which the author played so distinguished a part.

Bronchoscopy, Esophagoscopy, and Gastroscopy

Third edition. By CHEVALIER JACKSON, M.D., Sc.D., LL.D., F.A.C.S., Professor of Bronchoscopy and Esophagoscopy, Temple University; Bronchoscopist, Temple University Hospital; and CHEVALIER L. JACKSON, A.B., M.D., M.Sc. (Med.), F.A.C.S., Professor of Clinical Bronchoscopy at the same University. London: W. B. Saunders Co., Ltd. 1934. Pp. 485. 37*s.* 6*d.*

IN this new edition Dr. Chevalier Jackson is joined by his son as joint author, thus assuring a family continuation of a reputation already firmly established. The arrangement of the book does not differ materially from that of its predecessor, while the illustrations retain their high level of clarity. The armamentarium has been increased, noticeably by the addition of costo-phrenic bronchoscopes, intended for the removal of foreign bodies in the finer bronchi. They are used in conjunction with a carefully designed double plane fluoroscope, elaborated with the help of Dr. Manges. It is interesting to learn that practically no foreign bodies are nowadays considered to be irremovable by bronchoscopic methods in the Temple University Clinic. Many have attempted to copy the methods used there, and some have designed fresh instruments with the intention of lessening difficulties of technique. None can hope to surpass this clinic in the care devoted to preparation, in technical skill, or in the excellence of the results obtained. The details of the team-work are apparently unaltered; no inclination is noticeable towards the use of a mechanical head-rest, an adaptation called for in clinics where the facilities are less developed. The authors themselves continue to avoid the use of general anæsthesia, but they realise that every operator must decide for himself on this question, and many will prefer to employ—in suitable cases—such merciful drugs as avertin or evipan. The authors do not appear to be impressed by the results of implantation of seeds of radon in œsophageal carcinomata, and tend rather to recommend deep X ray therapy and early gastrostomy. In this country congenital shortening of the œsophagus, associated with the presence of a thoracic stomach, has attracted considerable attention; it is not given prominence in this work.

The book gives explicit and ample directions on all points of operative technique, and on the diagnosis and treatment of diseases of the larynx, trachea, bronchi, and œsophagus; in addition, it provides much information on subjects beyond the direct sphere of peroral endoscopy.

It should be of the greatest interest to the thoracic surgeon who requires the information afforded by direct examination before dealing with such diseases of the lungs or œsophagus as fall within his province. Above all, this book, based on years of experience, is the authoritative guide for the laryngologist in every branch of peroral endoscopic work.

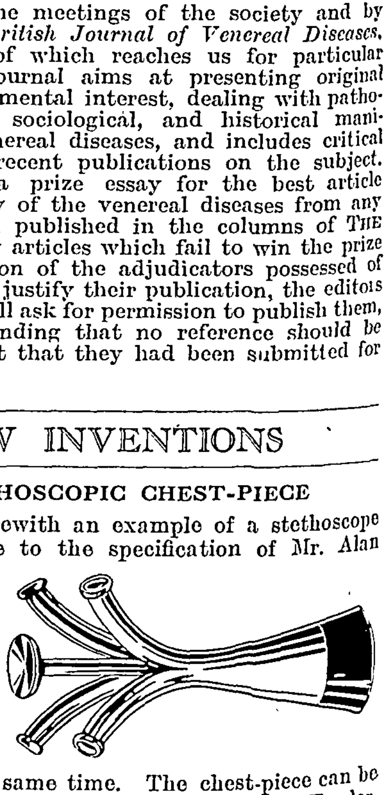
Medical Society for the Study of Venereal Diseases

THE Society aims at the bringing together those interested or engaged in the diagnosis, treatment, and public health aspect of venereal diseases. This comprehensive purpose involves a membership composed of practitioners, who are engaged not only in the study and practice of venereal diseases, but in those branches which possess interests cognate to the foregoing. For example, genito-urinary surgeons, neurologists, dermatologists, and ophthalmologists by exchanging views can give to and receive from each other enlightenment. Such an interchange is rendered possible by the addresses given and the resultant discussions at the meetings of the society and by means of the *British Journal of Venereal Diseases*, a recent issue of which reaches us for particular notice. The Journal aims at presenting original articles of fundamental interest, dealing with pathological, clinical, sociological, and historical manifestations of venereal diseases, and includes critical reviews of the recent publications on the subject. Particulars of a prize essay for the best article dealing with any of the venereal diseases from any angle have been published in the columns of THE LANCET. If any articles which fail to win the prize are in the opinion of the adjudicators possessed of such merit as to justify their publication, the editors of the Journal will ask for permission to publish them, on the understanding that no reference should be made to the fact that they had been submitted for the prize.

NEW INVENTIONS

A STETHOSCOPIC CHEST-PIECE

I ENCLOSE herewith an example of a stethoscope chest-piece made to the specification of Mr. Alan Burrows, which I have found very useful for teaching purposes. By means of this chest-piece it is possible for two persons to auscultate at the same time. The chest-piece can be procured from Messrs. Alexander and Fowler, Pembroke-place, Liverpool.



I. HARRIS, M.D.

THE LANCET

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SUPERSENSITIVE SKINS

CUTANEOUS inflammation provoked by irritants does not differ profoundly from the kind of reaction associated with "sensitisation"; thus primula dermatitis has much in common with chrome dermatitis, though chromic acid is an irritant and the primula plant, strictly speaking, is not. This is at the root of much difficulty and confusion in the interpretation of dermatoses, especially in industrial and medico-legal work. Theoretically differentiation should be readily possible, the one reaction being exogenic and pathological, the other personal and physiological; but in practice there is a large group of affections coming into both spheres in which it is far from easy to assess the relative importance of external irritant and internal idiosyncrasy. It is here that the patch test is likely to be helpful, and it now fills an important place in dermatology. If the suspected agent is applied for 24 hours to the skin of a number of people and if it produces no reaction in the normals but only in the patient, the information will obviously be of value; and though the patch test does not always tell us all we want to know it has the merit of being very reliable—unlike the scratch and intradermal tests which are uncertain in action.

From time to time cases of dermatitis are reported as arising from contact with nickel or chromium—metals which are not chemical irritants at all. Since the carbonate, phosphate, or chloride of chromium can be ingested or inhaled by animals without harmful effects, it must be supposed that before dermatitis is produced some degree of corrosion is necessary; the formation of oxides, sulphates, or chlorides will facilitate ionisation, and it is presumably the non-toxic metallic anion which provokes reactions in a person with specific allergic sensitiveness. Dermatitis of this type is reported from the wearing of nickel or chromium spectacles, wrist-bands, safety-pins, and suspender clips, and it appears to be essentially similar to dermatitis due to fur, hair, and fabric dyes; alkaloids like atropine; chemicals like boric acid, perchloride of mercury, picric acid, and bichromate of potash; oils; turpentine; alkalis and other common causes of allergic dermatitis. The sensitisation seems to be always epidermal and can be demonstrated by a patch test which gives a positive reaction in the susceptible subject only. The hypersensitiveness is sometimes very acute, as in the case reported in our present issue by Prof. HERCUS and Mr. PURVES, in which a youth suffering from dermatitis provoked by contact with furs containing a trace of bichromate of potash gave a positive patch test to a dilution of 1 in 100,000 of the salt. That serious industrial hazards are associated with the nickel-plating, chromium-plating, dyeing, and other chrome trades has long been recognised, but for the most part the inflammations and ulcerations of skin and mucous membranes are the direct result of gross chemical injury from chromic acid or the chromates, and any and all who are subjected to the conditions of the trades must suffer from them unless adequate precautions are taken; here the chromium is present in the kation, which is irritant by reason of its oxidising properties. At the same time there is in these trades a high incidence of eczematous dermatitis, even where intimate contact with strong irritants is avoided, and this is attributable to sensitisation to chrome or other substances encountered. We know that skin sensitiveness and occasionally asthma may follow injury from chrome dust, and the question of an association between these two types of reaction—the direct, irritant, or pathological, and the allergic or idiosyncratic—inevitably comes up. Paraphenylene-diamine is toxic by virtue of its chemical structure, and internally gives rise to serious damage which may prove fatal: has this any bearing on the fact that a very small proportion of people coming into contact with paraphenylene-diamine on a fur will give an allergic response to its presence? Bichromate of potash as a solid will provoke an ulceration of tissues in all who handle it, whereas only a few have an allergic sensitiveness to it in ordinary solutions. Such sensitiveness may be shown to a great variety of substances, many of them quite harmless but some definitely irritant in strong concentrations, such as iodine and perchloride of mercury; and it may be that the natural toxicity of a substance has some relation to the ease with which it provokes an allergic response. Evidence can be found in favour of this contention, but even if it is correct we must still take account of constitutional difference between the allergic and the normal subject—a difference often apparent on examining the patient and his past and family history. JOULES,[1] in recording a case of asthma due to chrome sensitisation, suggested that the disease may have been provoked by a heavy initial exposure to the irritant; and it is probable that such "massive dosage" helps to produce skin sensitisation also. The incidence of dermatitis in the chrome industries lends some support to this idea, as does BLOCH'S demonstration that repeated application of a concentrated extract of primula will provoke sensitisation in anyone. HAXTHAUSEN[2] succeeded in inducing sensitiveness to perchloride of mercury by the intradermal injection of this substance mixed with a little of the subject's own serum, and for several weeks a positive patch-test reaction could be evoked. Likewise desensitisation can sometimes be performed; for example, WALLER[3] has managed to desensitise patients suffering from atropine dermatitis by the injection of atropine combined with the protein of tears. The desensitisation was not always long-lived but it was of real practical value.

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[1] Joules, H.: THE LANCET, 1932, ii., 182.

[2] Haxthausen, H.: *Arch. f. Dermat. u. Syph.*, 1934, clxx., 378.

[3] Waller, R. G.: *Trans. Ophthalmol. Soc.*, 1934, liv., 96.

Much remains obscure about these phenomena, and the discovery of a specific exciting cause may solve only part of a patient's problem. The allergic subject may pass from one trade to another and present the particular dermatoses of each. Not only so, but he may quite conceivably develop a specific allergic sensitiveness to some external agent by reason of psychological trauma, the dermatosis being an associated reaction of the conditioned reflex type.

THE STOMACH AND THE SOUL

ELSEWHERE in this issue we publish a lecture by Dr. GEORG WOLFF of Berlin, whose medical-statistical researches are favourably known to his colleagues in this country, which starts a train of reflections. In these days of international tension, it is imprudent to make *any* comment upon the condition, moral or physical, of a foreign country. *But it is perhaps not unduly bold to* say that, throughout the period Dr. WOLFF has studied, the economic state of Germany was less favourable—or more unfavourable—than that of England. Those who still believe that Germans are better organisers than English may urge that Germany has made more skilful use of her inferior resources than we should have done. But nobody can seriously maintain that 1924–32 was a time of prosperity in Germany. Yet, as Dr. WOLFF shows, there has been throughout that gloomy period a steady improvement in the physique of urban children. Whether we adopt his anthropometric criteria or the evidence of mortality-rates, it appears that the German people are physically better off than in times to which some of their leaders look back as to a Saturnian age. *De te fabula narratur.* It might not be difficult to select particular observations within the field of public hygiene in our own country which give reason for apprehension. We have no doubt that Dr. WOLFF could also select from German experience some features which are unpleasing. But in England, as in Germany, a general survey of the public health is reassuring. Some have criticised the utterances of that eminent public servant, Sir GEORGE NEWMAN, on the ground that he has put too favourable a complexion upon the facts. The criticism is based upon a confusion of thought. Great evils still exist but, from the physiological point of view, general improvement is manifest. Indeed it may well be that this improvement itself is a principal factor of modern discontents. Almost a century ago a now forgotten author wrote :—

> "It is a popular saying, that hunger will break through stone walls, by which it is implied, that its calls are not to be resisted and that the most difficult obstacles will be overcome to satisfy it. This may be true of hunger induced by sudden fasting occurring to persons in good health, but it is very far otherwise when an individual is suffering gradually and becoming exhausted by slow degrees, from a long continued deficiency of food or the use of a very impoverished diet. In such cases, when the health begins to decline, mental obtuseness and diminished sensibility follow: all the sensations are blunted, and the feeling of hunger being feebly experienced, no very strenuous efforts are made to allay it." (R. B. Howard: An Inquiry into the Morbid Effects of Deficiency of Food. London, 1839, p. 28.)

This may be generalised. The physiological level of the peoples of West European nations has been raised ; the proportion of men and women who are too immersed in a struggle for bare existence to be able to reflect upon the contrast between the actual and the desirable has decreased. Thus we have a broad basis for discontent, divine or otherwise. As THE LANCET has so often urged, it is the psychological aspect of good health and bad health which urgently needs study. We may reasonably be optimistic as physicians of the body; as physicians of the soul we cannot look on the present or foresee the future with equanimity.

SNAKE VENOM IN THERAPEUTICS

USEFUL remedies may be extracted from the most unpromising materials, and even the reptilian venoms are now being turned to profitable use. Some time ago the treatment of epilepsy by colubine venoms was advocated in South Africa by F. W. FITZSIMONS, but it is difficult to assess its value from the few reports of cases so dealt with. MONAELESSER, in 1929, instituted the use of similar venoms as a local analgesic in cases of carcinoma, with reported success. Recently advantage has been taken by R. G. MACFARLANE and BURGESS BARNETT of the extremely powerful coagulant present in Russell's viper venom; it has been used with success as a local hæmostatic in cases of hæmorrhage in hæmophilic and other subjects.[1] A subsequent paper by S. M. PECK and N. ROSENTHAL[2] appears to establish a further venom as a therapeutic agent; they publish a report of 40 cases of hæmorrhagic diathesis treated by injections of the venom of the moccasin, a North American member of the crotaline species. They were led to this line of treatment by the observation of PECK and H. SOBOTKA[3] that a state refractory to the Shwartzman phenomenon could be produced by injections of vascular poison, moccasin venom being the most efficient. The Shwartzman phenomenon consists in local hæmorrhagic necrosis following the injection of certain bacterial filtrates. Its suppression by small amounts of a venom capable of producing hæmorrhages when given in larger quantities might suggest an immunity reaction. That this is not the mechanism, however, is shown by the fact that antibodies could not be demonstrated in the blood of animals so protected, and that antivenin had no effect on the Shwartzman phenomenon.

The possibility that the venom has some effect upon vascular tissues therefore becomes more probable, and on this assumption it was applied to cases in which these structures were considered responsible for the hæmorrhages experienced. The venom was given intradermally, or subcutaneously, as a 1 in 3000 solution, the usual initial dose being 0·4 c.cm., working up to 0·8 or 1 c.cm. in bi-weekly injections. Some cases developed a sensitivity and required de-sensitising. The first group of the reported cases consisted of five patients with an "idiopathic" tendency to bleed frequently from the nose, mouth, and gums, there being no discoverable abnormality of the blood or tissues to account for this condition. The group included also two cases of bronchiectasis with a liability to profuse and frequent hæmoptysis. After a few injections of venom, all these patients showed an almost complete cessation of bleeding over a period of several months. Eight women suffering from severe menorrhagia, with no definite organic cause, are said to have benefited very considerably from injections of the venom, though these had to be continued for a considerable time. A series of ten cases of "toxic, anaphylactic, or endocrinal purpura" was also treated. In these cases the blood picture was normal, and the appearance of ecchymotic or purpuric spots was the principal abnormality. Two patients showed no response, but in the remainder remarkable success was achieved. Four with Osler's disease (hereditary hæmorrhagic telangiectasia) also received treatment, and all of these were reported to show improvement with diminution of the telangiectases in three of them. The response of patients suffering from thrombocytopenic purpura was less encouraging. Four failed to make any improvement, and, though four recovered completely, it is, as the authors point out, impossible to ascribe this recovery to the action of the venom with any certainty. Five patients showed improvement, however, and it is interesting to note, from the point of view of the ætiology of the condition, that this improvement was not accompanied by a rise in the platelet count, nor by a decrease in the bleeding time. Three cases of hæmophilia were treated. As might be expected, no beneficial effect was produced.

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[1] THE LANCET, 1934, ii., 985.
[2] Jour. Amer. Med. Assoc., March 30th, 1935, p. 1066.
[3] Jour. Exp. Med., 1931, liv., 407.

Reviewing this work, it becomes apparent that the best results were reported in the patients having no ascertainable alteration in the blood, or in its clotting processes. The mechanism of persistent hæmorrhages in such cases is obscure, but the fault seems to lie in the tissues that contain the blood. Thus the "idiopathic" bleeders, the cases of telangiectasia, menorrhagia, and those of non-thrombocytopenic purpura, were reported to do very well when receiving venom. Moccasin venom in small amounts has no effect on the coagulation of the blood in vivo. Its failure in hæmophilia is therefore not surprising. In this condition it is almost certain that the tissues and vessels are normal. The fact that in the cases of thrombocytopenic purpura the results of this treatment are conflicting is of interest in view of the divergence of current theories on the ætiology and mechanics of this condition. It appears that this venom exerts some influence upon the vascular tissues, resulting in a decrease in their permeability, or liability to toxic damage, and it is in cases where such factors play a part that it is useful. Quite apart from the clinical advance claimed by PECK and ROSENTHAL, their work raises many important theoretical questions, and should open up a line of investigation which should prove of value to those studying the hæmorrhagic diathesis.

A STORY OF PUBLIC HEALTH PROGRESS

SIR ARTHUR NEWSHOLME has done well to publish these reminiscences [1] of his long life of distinguished public service. The period covered by the present volume was one of great developments in preventive medicine. Changes of basic importance were made in our ideas of the causation of disease and were reflected in new administrative methods designed to express the new ideas in terms of preventive activity. In these developments the author of this book has played an important part; it is not too much to say that it is largely due to the influence he has exercised during the last fifty years that our system of public health administration has reached its present position.

NEWSHOLME's recollections go back to his native village, the Haworth of the Brontës, in the 'sixties, where he talked with people who had known the three gifted sisters and with the village druggist, an old woman, who had seen Bramwell Brontë's determined attempt to justify his boast that by force of will he would die standing. And we read that there were remarkable folk in Haworth before the Brontës, notably the Rev. W. Grimshaw, a former vicar, who on occasion did not hesitate to use a horsewhip to induce his parishioners to attend church. From Haworth the author, after a year as apprentice to a Bradford general practitioner, proceeded to St. Thomas's Hospital, where as a dresser he saw the early use of the carbolic spray and had as a fellow student and friend Kanehiro Takaki, destined to free the Imperial Japanese Navy from beri-beri. Among his teachers were Bristowe, then health officer for Camberwell, and Murchison; and he gives a vivid account of the last clinical lecture delivered by Sir John Simon, whom 32 years later he was to succeed as medical officer to the Local Government Board. In the final M.B. examination he was examined by Matthews Duncan, who had recently been appointed obstetric physician to St. Bartholomew's, and who was wont to give his pupils an admonition which, if generally adopted at the present time, would do much to reduce maternal mortality: "Never hurry, except in one circumstance—when you are trying to catch a flea." The author approached public health through general practice, and still retains the clinical outlook—an important qualification for an administrative health officer. In 1883 he was appointed M.O.H. of Clapham (a part-time appointment) where for two years he had been a general practitioner, and in 1888 took up his first whole-time post—that of M.O.H. of Brighton—which he held until his appointment in 1908 as medical officer to the Local Government Board.

The period he now reviews saw fundamental changes in epidemiological theory and practice.

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[1] Fifty Years in Public Health. By Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P. London: George Allen and Unwin Ltd. 1935. 15s.

At the beginning both were dominated by the doctrine promulgated by Chadwick and Southwood Smith, that not only does "dirt produce disease," an important but incomplete generalisation, but that effluvia from organic filth are capable of producing fevers. The author accords the chief credit of displacing the effluvia theory by a more scientific ætiology to John Snow, a London anæsthetist, and William Budd, a Bristol physician, who by personal investigation of cholera outbreaks showed that epidemic diseases are due to specific agents that multiply in the body and are communicated from one person to another :—

> "To Budd and to Snow, England is profoundly indebted. Eventually they swept away the older view that without discrimination, sanitary defects, with resultant respiratory and excremental contamination of the air determine respiratory and intestinal diseases. While not minimising the importance of these auxiliaries, they placed in its correct supreme position prevention of specific contagion as the direct aim of sanitary effort, the general removal of filth taking its place as an essential part of the effort to this end."

The general acceptance of these views, which was long delayed by the prevailing influence exercised by Max v. Pettenkofer with his emphasis on the importance of ground-water levels, led to the modern triumphs of preventive medicine. Not only has environmental "sanitation" become much more definitely directed and effective, but great advances have been made in the field of personal hygiene. The story of this progress is unfolded by the author with a freshness of outlook and a wealth of anecdote and reminiscence that make his narrative very much alive. He tells how the notification of tuberculosis in this country began, on a voluntary basis, in Brighton in 1899, and how he showed that shell-fish may convey the infection of typhoid fever—a service that brought upon him much local obloquy, which was dispelled when an oyster supper was followed by several cases of the disease including that of the chairman of the health committee, who came under the author's care as a patient in the municipal fever hospital. He tells also of researches into the ætiology of rheumatic fever, diphtheria, and summer diarrhœa; of numerous "excursions in statistics"; and of pioneer work in school hygiene and maternity and child welfare. He holds "that only after studying how public health—or any other science, theoretical or applied—has come to be what it is can one fully understand its present position, and prepare for further advance with a minimum risk of mistakes."

This volume deals chiefly with events up to 1908, when the author was appointed medical officer to the Local Government Board, and it is to be followed by one dealing with the progress made in public health while he was working at the centre. It was then that antituberculosis work was begun on a national scale, that the movement for the control of venereal disease was initiated, and that Government grants were first made available in aid of local maternity and child welfare work. All these measures were introduced on the initiative of Sir ARTHUR NEWSHOLME, whose second volume will be awaited with general interest.

ANNOTATIONS

TRANSMISSION OF POLIOMYELITIS TO MICE

THE investigation of human diseases of virus ætiology is peculiarly dependent upon animal experiments and the rate of progress is, to a large extent, governed by the species of animal susceptible to infection. The success apparently obtained by Brodie and his collaborators in transmitting anterior poliomyelitis to mice[1] opens up new avenues of approach to its experimental study, which hitherto has necessitated the employment of monkeys. Primary infection in mice was obtained by giving short X ray doses daily for ten days and then inoculating them, both intracerebrally and intraperitoneally, with virus obtained from monkeys. After an incubation period of 11 days or longer, a number of the animals showed ruffled hair, ataxia and dragging of the hind limbs; some of them died. Thereafter the disease could be transmitted serially through mice by intracerebral inoculations of infected brain tissue without the preliminary X ray treatment. With succeeding passages symptoms became more definite and the incubation period shorter, whilst the infectivity of the brain tissue increased. Thus, by the fifth passage, a 10 per cent. suspension of infected brain produced the disease, with an incubation of three days, in all the mice inoculated, whilst twelfth passage brain was infective in a dilution of 1 in 1000. The authors refer to "fixed" virus giving rise to an acute clinical picture and death within a few hours of the onset of symptoms. The "fixed" virus was also infective when administered intranasally, the incubation period being five to six days.

The lesions in mice were predominantly in the brain and meninges, in contrast to the spinal cord localisation in man and monkey. However, although virus was found in greatest concentration in the brain, it was distributed throughout the cerebro-spinal axis. The virus etiology of the mouse disease was shown by the successful infection of both mice and monkeys with bacteria-free filtrates, the latter species exhibiting "typical poliomyelitis."

The authors give a convincing summary of evidence in support of their claim that the mouse virus is the virus of poliomyelitis. Thirteen monkeys were infected with the mouse strain; the spinal cords of 4 of them were examined and showed the characteristic histopathological picture. Virus obtained from one of the 13 was first passed through another monkey and then successfully transferred back to mice. Convalescent human serum neutralised the virus and protected a monkey against infection. The virus was also neutralised by convalescent monkey serum, but not by normal monkey serum. It is emphasised that the mouse disease differs both clinically and histopathologically from Theiler's mouse encephalomyelitis.[2] A fuller report of this work and its logical extensions will be awaited with interest, especially details concerning the cross transference of virus between mice and monkeys and the immunological relationships between mouse and monkey strains. The authors already envisage a practical application of their discovery in the determination of the most suitable human subjects for prophylactic immunisation by the titration of human sera in mice.

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[1] Brodie, M., Goldberg, S. A., and Stanley, P.: Science, 1935, lxxxi., 319.

[2] Theiler, M.: Science, 1934, lxxx., 122.

A PSYCHONEUROTIC CLINIC

THE annual meeting and luncheon of the Institute of Medical Psychology on Monday of last week gave opportunity for a review of the work done during the 15 years since the Institute was founded in Tavistock-square. One notable change is the increase in the proportion of children who come for treatment. Of the new patients last year more than a third were children, and most of the speakers expressed their full satisfaction at this development. Lord Allen of Hurtwood especially saw in the new attitude of medical science to mental health the augury of good hope for the future. Anxiety, he said, is an all-pervading characteristic of our time, and for the maintenance of democracy it was essential not so much to improve the machinery of government as to ensure the mental health of the electors. Dr. Rees in a very informative address referred to the lesson of Dr. J. L. Halliday's inquiry into psychoneurosis as a cause of incapacity among insured persons in Scotland. Behind such diagnoses as anæmia, debility, gastritis, lay mental illnesses, in the main states of anxiety; on a conservative estimate a third of the group investigated were suffering from psychoneurotic disorders. Dr. Rees reiterated his belief that something over 60 per cent. of their patients were permanently relieved or cured. He lamented that the results were not as good as this in cases referred by the courts; the man who comes for treatment of his own free will will certainly, he remarked, do better than the man who regards his treatment as part of his sentence. There is still far more work of the kind to be done than can be done with the available staff at the Institute, although some 60 doctors put in 17,000 hours of work last year—which, as the hon. treasurer remarked, would have cost over £50,000 at Harley-street rates. Actually the payment per patient works out at about 2*s.* 6*d.* per attendance. A source of pride to the Institute is its recognition during the year by London University as an authorised centre of teaching for the diploma in psychology. Sir Henry Brackenbury in announcing this fact coupled with it the hope of a definite association of the Institute with the new Postgraduate Medical School at Hammersmith. The Institute was, he said, in a position to supply a peculiar need in this branch of post-graduate education.

PROSTATECTOMY WITH CLOSURE

IN the hands of its originator suprapubic prostatectomy with closure has been conspicuously successful. Thus in his latest paper,[1] summarising the results he has had in the four years since its introduction, Mr. Harris is able to report 556 cases with a mortality of 2·7 per cent. and without a single instance of post-prostatectomy obstruction. Although primary closure of the bladder is one of the advantages of the operation, it must not be regarded as an essential. Indeed there are certain cases in which it should not be attempted—cases in which the surgeon is not wholly satisfied that hæmorrhage has been controlled by suture, or in which the pre-operative cleaning has not proved entirely efficient. Since complete hæmostasis depends on the efficiency of the suturing, it must follow that the greater the experience and skill of the operator, the larger will be the proportion of cases in which he can perform complete closure, and in the last 100 operations performed by Harris there were only 2 in which it could not safely be carried out. A modification of the technique of "retrigonisation" or reconstruction of the floor of the prostatic urethra has been introduced. The point of entry of the boomerang needle carrying the posterior suture is now well down behind the inter-ureteric bar and usually at the deepest part of the bladder emerging in the floor of the prostatic cavity, and the bite of the needle now includes, with ease and certainty, a portion of tissue much wider and deeper than was included when the point of entry was at the base of the trigone. Another result of widening the scope of the posterior suture is that the special forceps hitherto employed at this stage of the operation are now rarely if ever required.

Originally condemned in this country, Harris's technique has been adopted by many British genito-urinary surgeons during the last year. Though unlikely to be used as a routine, it seems to be gaining an important place in prostatic surgery.

DOSAGE OF ASCORBIC ACID

A FEW weeks ago Dr. A. D. C. Bell and Dr. Wilfrid Sheldon reported the successful use of synthetic ascorbic acid for the cure and prevention of scurvy,[1] and it was suggested that these must be the first records of the treatment of human beings with a synthetic vitamin. This is probably true, but the use of the pure substance, ascorbic acid, as prepared from natural sources, dates from 1933.[2] Poul Schultzer's patient was an adult, who received 40 mg. daily intravenously for ten days, followed by the same dose every other day for ten days, while L. G. Parsons gave a nine-months' infant 40 mg. daily by mouth for eight days, and 20 mg. for another six. Both made good recoveries. In the following year, 1934, the German medical weeklies published the cure of another adult with a daily dose of 100 mg. (Bauke [3]), and of several babies (six to thirteen months) with daily doses of 30–60 mg. orally.[4] Svensgaard [5] recorded the cure of two infants, in a week and a fortnight, with 30 mg., also by mouth. How far it is an advantage to use ascorbic acid rather than orange or lemon juice is doubtful, but in face of actual scurvy the clinician is likely to prefer a standardised product, which creates no disturbance and can be injected—especially as it can now be produced very cheaply. Evidently a daily dose of 30 mg. will cure an infant though possibly 50 mg. would bring more rapid relief—a matter of some importance in a disease which causes so much suffering. The work of L. J. Harris and S. N. Ray [6] incidentally threw light on the infant's probable total requirement of ascorbic acid; for they found that the average amount in milk from 13 women was 0·056 mg. per c.cm., and since a breast-fed infant takes round about 600–1000 c.cm. of milk daily and almost never develops scurvy, it must be assumed that 30–60 mg. of ascorbic acid daily provides a margin of safety. A. Szent-Györgyi [7] estimated the infant's daily requirement at probably about 25 mg. Sheldon's case of a child with cœliac disease, which was protected for six months when receiving only 5 mg. daily in supplement to a diet thought likely to produce scurvy, cannot be taken as conclusive evidence that so small a dose is adequate, since the diet was not wholly devoid of vitamin C, and six months might not be long enough to reveal a partial deficiency. As regards the adult requirement there is much less evidence. Schultzer's patient was cured with 40 mg. daily, administered intravenously, and Bauke's with 100 mg., also injected. F. J. Göthlin,[8] who has inquired into the prevalence of latent scurvy in Scandinavian countries, suggests 27 mg. as the daily requirement for a 60 kg. man. It would be valuable if cases of scurvy in adults—now fortunately seldom seen—could be used for the accurate ascertainment of the adult minimum dose.

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[1] Harris, S. H.: Australian and New Zealand Jour. of Surg., 1934, iv., 226.

[1] THE LANCET, March 9th, 1935, p. 547; and March 23rd, p. 701.

[2] Ibid., 1933, ii., 939; Proc. Roy. Soc. Med., 1933, xxvi., 1033; see also THE LANCET, 1934, i., 427.

[3] Münch. med. Woch., 1934, lxxxi., 1240.

[4] Monats. f. Kinderheilk., 1934, lxxix., 451; Deut. med. Woch., 1934, lx., 1202, 1203.

[5] THE LANCET, 1934, i., 22.

[6] Ibid., Jan. 12th, 1935, p. 71.

[7] Deut. med. Woch., 1934, lx., 556.

C. L. A. CHAMPETIER DE RIBES

THE name of Champetier de Ribes, who has just died at his home in France, is one which several generations of medical students associate with obstetrical devices. Born in 1848, he came of a distinguished legal family, one member of which was Minister of Pensions in a recent French cabinet. His medical career began in Paris with his appointment as a hospital intern in 1875, and four years later he produced a doctorate thesis on the extraction of the fœtal head through a contracted pelvis. The movements there described—since known as the Champetier de Ribes' manœuvre—proved of great value at a time when obstetrics was less surgical than it is to-day. The Champetier de Ribes' bag, made of canvas and covered with gutta-percha, came to displace the too fragile and elastic rubber bags previously employed for the dilatation of the cervix, and has been widely used in the treatment of placenta prævia.

A CARDIAC GLUCOSIDE

ATTENTION has lately been drawn to a glucoside obtained from the plant *Thevetia neriifolia*, growing in tropical or subtropical climes. It has long been known that the kernel of the nut (the bee-still nut) of this plant is poisonous, and chemical studies of its action were made last century. A clinical investigation of its digitalis-like action is now reported by H. L. Arnold, W. S. Middleton, and K. K. Chen.[9] First it was found that in men with apparently normal hearts doses of one to five cat-units given in aqueous solution by mouth reduced the pulse-rate by 9 to 20 beats per minute within two or three hours; the extent of the fall in rate was not strictly proportional to the size of the dose. Intramuscular injection likewise caused slowing of the heart but gave rise to pain at the site of the injection. Tests were then made on 23 patients with severe cardiac failure, using both intravenous and oral routes of administration, and it was shown that the heart-rate was slowed both in auricular fibrillation and when the rhythm was normal. The extent of the slowing was very variable but the possibility of causing a reduction of 30 to 40 beats per minute within 15 to 40 minutes of the injection of five cat-units was demonstrated both with regular rhythm and fibrillation. Improvement, both objective and subjective, was noted in some cases and digitalis effects could be maintained when thevetin was substituted for digitalis. The electrocardiogram usually showed changes similar to those produced by administration of digitalis—namely, increase in the auriculo-ventricular conduction-time and depression of the T-wave and the R–T interval. In some cases extrasystoles appeared to be caused by the drug. Adverse effects were observed on gastro-intestinal system as well as heart, but the anorexia, nausea, vomiting, abdominal pain, and diarrhœa which sometimes developed were commoner after the tincture of thevetia given by mouth than after intravenous injection of an alcoholic solution of the glucoside. Serious disturbance of intracardiac conduction was observed in one patient; and another died suddenly within a few minutes of an intravenous injection of thevetin. It appears that in this case the extent of previous digitalisation was uncertain.

Biological assay has shown thevetin to be one-seventh as toxic and one-seventh as potent as strophanthin. The clinical studies of Arnold and his co-workers indicate that on intravenous injection it has an action similar to that of digitalis, but more quickly developed. Also the conspicuous slowing of the heart in normal rhythm is a promising property. It is clear, however, that much more clinical experience will be needed to establish its exact place, if any, in therapeutics. It may or may not prove to have some advantages over the tried cardiac glucosides; but judging by Arnold's results the announcement that it is a most valuable cardiac remedy seems to have been premature.

ALL ABOUT HOSPITALS

THE fifth annual issue of the "Hospitals Year Book" reaches us this week. It is a comprehensive record of the voluntary hospital system, and in a sense the year book is the system, for under the auspices of the British Hospitals Association and of the Joint Red Cross Council the Central Bureau of Hospital Information (of which Mr. A. E. Ceadel, F.S.S., is secretary) has been doing work which will help more than any other single factor to perpetuate the existence of this system. It is the intention of Mr. R. H. P. Orde, who is hon. secretary of the Association and editor of the Year Book, that the voluntary system of hospitals should reach a degree of administrative excellence equal to that attained medically and surgically. One of the objects of the Association is to create machinery by which such a result may be made possible. The survey of statistics furnished by the voluntary hospitals themselves is increasingly complete; there was in the year under review a surplus of £923,000, receipts over expenditure, in the hospitals of Great Britain and Ireland, an amount £176,000 in excess of the previous year; but in his financial review Sir Charles Harris indicates the danger signal in hospital finance, which is deficit in maintenance account. There was in the year a deficit of £252,000 on the working of a group of 267 hospitals; this group includes a third of the London hospitals and a quarter of the hospitals in the rest of the United Kingdom. Legacies continue to shrink, and there is an increasing tendency to earmark them for special purposes. There is a strong feeling on the part of hospital administrators that the State should not intercept at the source one-tenth of all sums bequeathed for the benefit of the sick. As long ago as 1923 an influential deputation waited upon the financial secretary of the Treasury without success; while it may be true that a government grant would discourage voluntary gifts and depress the voluntary system it seems certain that the indirect assistance afforded by exemption from legacy and succession duty would encourage it. To balance the maintenance account a concerted move is being made to check waste on purchases. One objective of the Bureau is to bring users and producers into effective contact; it now makes the practical suggestion that a new article should be tried out by a group of say half a dozen hospitals which should then give the others the benefit of their experience. Otherwise it might easily happen that a new article might be tried by 50 or 100 hospitals and eventually discarded as unsuited for its purpose. Purchase in bulk last year saved one county council more than £8000 in the cost of provisions, drugs, and clothing, an example of economy without detriment to the objects of hospital care. Little need be said about the directory of voluntary hospitals which is year by year more complete and informative. It is not possible to say quite the same of the directory of municipal and public assistance hospitals, for a casual glance makes it evident that the hospitals which have not yet been appropriated by public health authorities but are still under the public assistance committees do not appear in the directory. Some of these hospitals, although nominally institutions, are as large and as well equipped as any of the non-teaching voluntary hospitals. To take a single example, the Romford Institution under the Essex County Council is a modern hospital with accommodation for over 800 patients, a visiting staff of seven well-known consultants, and surgical assistants for whom the qualification of F.R.C.S. Eng. is demanded. No survey of hospitals in this country could be considered complete without them, but there is no work of reference—not even the Medical Directory—in which they are included. It is an illustration of how little the intention of the Local Government Act of 1929 is yet appreciated that in 1935 there should still be hospitals in a sort of no-man's land. The Year Book may be obtained from the Joint Council House, 12, Grosvenor-crescent, London, S.W.1, at the price of 10*s*.

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[8] Skand. Arch. f. Physiol., 1934, lxxi., 15.

[9] Amer. Jour. Med. Sci., February, 1935, p. 193.

A USE FOR SEIZED NARCOTIC DRUGS

THE Permanent Central Opium Board held its twenty-third session at Geneva on March 25th–29th and L. A. Lyall, the British representative, was unanimously re-elected chairman. A question arose as to what should be done with contraband dangerous drugs that had been confiscated and whether the export of such seizures should be regarded as permissible under Article 18 of the Limitation Convention of 1931. The Board noted with satisfaction the recommendation of the Advisory Committee on Traffic in Opium to the effect that " seized drugs, if not destroyed or converted, but reserved for medical and scientific use within the meaning of Article 18 of the Limitation Convention should be devoted to the requirements of hospitals and scientific institutions or incorporated in Government stocks." In view of the magnitude of the seizures in some countries it is well to have this definite ruling and thus finally account for this illicit surplusage of supply. The Board has again had occasion to call attention to the insufficient statistical information furnished by some of the States which are parties to the several conventions; in particular several of the Central and South American countries have been in default in this regard. The investigation by the Board into discrepancies between reports received led to the discovery in one case of a forged certificate for import, and in another case that a legitimate order had been stolen in course of transit. The next meeting of the Advisory Committee on the Traffic in Opium and other dangerous drugs will be held in Geneva on May 20th, when no doubt attention will be called to the accusation, made before a special court in Cairo, that several doctors, a chemist, and some male nurses have been implicated in illicit traffic in dangerous drugs.

HOMŒOPATHIC TREATMENT OF FEVERS

IT appears that the corporation of Glasgow has given its medical officer of health a free hand to experiment with the treatment of cases of infectious disease by homœopathic methods in the city hospitals, if he so desires. The proviso was made, no doubt, in the knowledge that a local authority or the governors of a hospital have no legal responsibility for the results of treatment. Their duty ends when they have exercised reasonable care in appointing their professional staff (Evans *v.* Corporation of Liverpool, 1906, 1 K.B. 160; Hillyer *v.* St. Bartholomew's Hospital Governors, 1909, 2 K.B. 820; and Foote *v.* Shaw Stewart, 1912, S.C. 69). Obviously, if a medical officer has to bear the brunt of any claim for damages arising from the mode of treatment he has adopted, the decision as to the nature of that treatment must be left to his own judgment. Apart from any question of lay dictation, which does not appear to arise in the present instance, it must be remembered that the medical officer of health of a large city is an administrative officer. While he is generally responsible for the conduct of the medical staff engaged in clinical work, he is hardly in a position to supervise or dictate their clinical methods. Indeed, any attempt on his part to do so might justifiably be met with the retort that he must conduct and personally take full responsibility for the treatment of the individual patients by any methods which he personally wishes to be submitted to investigation. This would be impracticable. It would seem that, in the case of homœopathy in Glasgow, there is no attempt to compel the medical officer of health and his colleagues to try out homœopathy, and probably if they refuse to take the responsibility the council will appreciate their reasons; but, if they desire to please the majority who evidently wish to see it tried, the only safe course is to ask the corporation to take the responsibility themselves of appointing a homœopathist, or a team of homœopathists, for a sufficient period to make the experiment worth while.

So far as some of the infectious diseases are concerned, such as scarlet fever, it is probably true that it matters very little what form of therapy is administered, so long as the nursing and general care of the patients is adequate. To a certain extent this may be true even of such a fatal disease as typhoid. But scarlatina is now so mild and typhoid is now so rare in this country that it might take a very long time to determine the result of any experiments in their treatment. On the other hand, the application of the principles of homœopathy, if we understand them correctly, to the treatment of diphtheria, cerebrospinal fever, and, to a certain extent, pneumonia, would be contrary to the whole trend of present-day medical opinion, which is all in favour of specific serum therapy. These diseases are comparatively lethal and any departure from orthodoxy in treatment might have serious results. Yet it would be unscientific to select the diseases or the patients to be submitted to an experiment of this kind. If an investigation into the merits of homœopathy were to be conducted in a public hospital, it would appear to be necessary for the public to be informed by the medical officer of health that its methods are contrary to accepted medical opinion and that he and the medical superintendents of the hospitals will take no

Dr. Robert Hella Library

responsibility for the results. If, on the other hand, the homœopathists maintain that, in the use of specific sera, they differ neither in principle nor in choice of reagents nor in their dosage from their medical colleagues, an experiment would serve very little purpose although it would probably be free from risk.

It may be that the corporation of Glasgow have received some assurance on these points. If they have, there is an easy way out for the medical officer of health, but a concession, which is itself not undesirable, would not be likely to lead to any practical conclusion as to the real merits of what is genuinely described as homœopathy. Perhaps the majority decision of the corporation is to be welcomed as indicating its appreciation of the benefit which may result from scientific investigation in its hospitals. The output of research from the fever hospitals in Glasgow and elsewhere has been considerable in the past. Perhaps it would have been greater if the hospital doors had been opened wide to research workers not definitely on the resident staffs. Any extension of this kind, which would not seriously interfere with hospital administration or the well-being of the patients, would be all to the good, but these conditions are essential, and, where patients are concerned, their sanction or that of their parents for any serious departure from accepted methods of treatment is desirable.

A COURT PHYSICIAN

Dr. Norbert v. Ortner was physician to the Emperor Francis Joseph and the last of the great Viennese clinicians. He had only just reached his seventieth year but had resigned his chair as director of the Second Medical Clinic some years ago on account of bulbar paralysis, and it is pathetic that he should have suffered for so long from a disease which he had himself often demonstrated to his pupils as incurable and of unknown ætiology. Ortner was a native of Linz in Upper Austria, and as a student developed a keen faculty of observation with a leaning towards pathology. Quite early he published two little books, one on congenital disease of the aorta, the other on mixed infection in pulmonary tubercle, and it was these, especially the latter, which attracted the attention of Neusser, who offered him an assistantship in his clinic. This was in 1893 and was the beginning of Ortner's career as a clinician. He spent his whole working life practising and teaching in Vienna, except for four years when he held the chair of medicine at Innsbruck, from which he was recalled in 1911 to succeed Strümpell as chief of the foremost medical clinic in Vienna. His writings included a contribution to infections of the bile-ducts, which brought him the Bamberger scholarship, studies of various valvular diseases of the heart, and a monograph on dyspragia intestinalis; but he is best known by his book on Pain and his great work on the Therapeutics of Internal Diseases which was translated into nearly every European language. Ortner was a rapid worker, with an insight into the psychology of the patient which often enabled him to make devastatingly correct diagnoses. His advice was sought by patients from all parts of the world. He tells the story of his life in the fourth volume of the series of medical autobiographies brought out some years ago by his colleague, Prof. L. R. Grote, and it is from this[1] that we take the characteristic portrait. In his self-study Ortner insists that the laboratory must always be the welcome and indispensable helpmate of bedside teaching, but he followed his teacher, Neusser, in regarding the laboratory bench as the means to an end. The clinician's motto must, he said, always be "Übers Laboratorium dauernd zur Klinik."

AGAINST TRACHOMA

The International Organisation Against Trachoma, formed at Geneva in 1930, met in 1933 at Madrid and in 1934 at Paris, when reports were presented from various countries dealing with the origin and prevention of the disease. At its recent meeting in London, the Hungarian ophthalmologist, Emile de Grósz, referred in his presidential address to advances made in Japan and Poland, Algiers and Tunis, and, above all, in Egypt. He announced that A. F. MacCallan, to whose efforts during 20 years the measures to combat trachoma in Egypt are mainly due, was elected chairman for the next cycle. There is still very much to do, he said, but the new chairman will be reinforced by old tried friends, among whom he specially mentioned Morax, the editor of the *Revue Internationale du Trachome*, De Lapersonne, president of the Association Internationale de la Cécité, and Wibaut, of Amsterdam, general secretary of the organisation. So far as the British Empire is concerned, the position is covered by MacCallan's report to the Paris meeting.[2] In parts of the Indian Empire—e.g., Punjab, North West Frontier, and Baluchistan—trachoma is universal, whereas at Simla, on the foothills of the Himalayas, it is comparatively rare. The disease in India is mild and not subject to the explosive outbreaks due to superadded infection seen in Egypt and Palestine. Uncomplicated trachoma is not a cause of blindness except as the result of dense pannus; the corneal-disintegrating factor is the bacterial infection. No universal scheme of prophylaxis has been devised which is suitable for all countries, but MacCallan insists that treatment should begin in the schools.

The King has consented to open the new British Postgraduate Medical School at Hammersmith on Monday, May 13th. He will be accompanied by the Queen.

A GIFT of £10,000 has been received by the treasurers of the rebuilding and endowment fund of St. George's Hospital, with the condition that the name of the donor should remain anonymous. The gift is spread over seven years, and as the income tax rebate accrues to the hospital it will be enhanced by some £2000.

The personnel of the committee appointed by the Home Secretary to advise him on the best methods of developing the Metropolitan Police Laboratory at Hendon, an account of the opening of which was given on p. 944 of last week's issue of The Lancet, is as follows: Lord Atkin, Lord Dawson of Penn, Lord Trenchard; Sir Russell Scott, Permanent Under-Secretary of State, Home Office; Sir Edwin Deller, Principal of the University of London; Sir Bernard Spilsbury, Sir Frank Smith, Secretary, Department of Scientific and Industrial Research; Sir Robert Robertson, Government chemist, and Mr. Hugh Lett, F.R.C.S.

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[1] Die Medizin der Gegenwart in Selbstdarstellungen. Leipzig: Felix Meiner. 1925.

[2] See Brit. Jour. Ophth., November, 1934, p. 625.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XLIX.—PROGNOSIS OF MENTAL DEFICIENCY IN INFANTS

THE difficulties of making an accurate assessment of the mental prospects of young infants are almost in inverse proportion to age: that is to say, the younger the infant, the more difficult is it to make a correct prognosis. The usual mental tests applicable in the case of older children are inadmissible at a period of life—under one year of age—when there is practically no mentality on which to make observations. The prognosis is, however, rendered much easier when by reason of anatomical stigmata of degeneration, or by the presence of gross cranial malformations, the infant can be assigned to some particular pathological category, such as mongolism, cretinism, microcephaly, hydrocephaly, nævoid amentia, or amaurotic family idiocy, for in such cases the mental prospects have already been fairly well defined. The most difficult cases are those in which there are no external abnormalities to help us, or those in which there is some defect of one or other of the special senses, as in cerebral blindness or deafness, conditions which at least temporarily retard intellectual progress in all directions and make the prospects of future development appear more hopeless than they actually are. In such cases the greatest caution is required in giving opinions as to the probable course of mental evolution.

While it is obviously impossible for even the most experienced pædiatrician or alienist to estimate with accuracy the probable future mentality of a baby at a time when intelligence and will-power have scarcely begun to develop, certain principles of assessment may help us to avoid serious mistakes. These include: (1) A review of the family history. (2) An inquiry as to possible damage that may have been inflicted on the central nervous system by trauma or infection, and its extent. (3) Physical examination to discover evidences of congenital stigmata of degeneration, or malformations. (4) Examination for motor defects—paralyses, convulsions, incoördinations, and so forth. (5) An examination to discover defects in the special senses. (6) An examination for evidences of anomalies of nutrition.

FAMILY HISTORY

Although there is a tendency at the present day to belittle the factor of heredity in the ætiology of mental defect, none the less most alienists agree that in something like 80 per cent. of all cases of amentia of high or low degree there is some family history of psychoneurosis, mental instability, tuberculosis, syphilis, alcoholism, or consanguinity, either singly or in combination. The prognosis is adversely affected when more than one of these ætiological factors act in conjunction, but too much stress must not be laid on these factors; ultimately diagnosis must rest on the signs and symptoms of the individual child, and each case must be judged on its own merits.

DAMAGE TO THE CENTRAL NERVOUS SYSTEM

When secondary amentia is due to obstetric or other form of trauma, to cerebral hæmorrhage, to meningitis, or to encephalitis, the history of the case helps very greatly in the formulation of a correct prognosis. In these cases there is very rarely any external evidence of congenital stigmata of degeneration, while physical examination of the infant reveals as a rule nothing abnormal; in fact such infants usually appear far less mentally defective than they ultimately prove to be. Indeed, as the late Dr. J. Langdon-Down expressed it, the prognosis in cases of secondary amentia of the above kind "is contrary to what is often thought, inversely as the child is comely, fair to look upon, and winning." The prognosis in such cases must be judged partly by the degree of the estimated damage inflicted on the central nervous system, and partly by the character and rate of development of the motor and other functions, but as a rule there is no progressive deterioration of the mental state; the child remains in the same relative degree of backwardness with no improvement and no deterioration.

CONGENITAL ANATOMICAL STIGMATA OF DEGENERATION

In those cases in which mental defect in young infants is accompanied by such gross malformations of the cranial bones as those included in the list given at the beginning of this article, or by other anomalies of development and stigmata of degeneration, which enable us to give a name to the condition, it is possible to predict with some degree of accuracy the probable course of events. But quite apart from the more easily recognisable and clearly defined conditions included in these categories, some varieties of primary amentia are accompanied and distinguished by anomalies in the development of the skeletal system, as for instance of the jaws, the palate, or the digits, or of the soft parts such as the ears, the eyes, or external genitals, which assist the diagnosis of mental defect and adversely affect the prognosis. Anomalies of this kind are far too numerous to mention here in detail, but speaking quite generally it may be said that in any particular case the larger the number of such anomalies and the greater the degree of malformation, the worse is the prognosis of the future mental state.

In such gross defects as *anencephaly* and *cyclocephaly*, the prospects both as regards the mental state and the expectancy of life are almost hopeless, and not very much better in *oxycephaly*. In *microcephaly* and *hypertelorism* the child may survive early childhood, although it will rarely attain to a sufficient degree of intelligence as to be able to read and write or look after itself. The actual degree however will depend on the extent of the deformity—and run a more or less parallel course with it.

In *hydrocephalus* the prognosis depends on the type. In the non-communicating cases the prognosis is hopeless in spite of attempts at surgical treatment. In the communicating cases—i.e., the so-called external hydrocephalus—with early and appropriate treatment the prospects are comparatively good, unless nystagmus and optic atrophy have already supervened. I have myself had quite a number of patients who by continued dehydration treatment have eventually made good recoveries without any mental defect and without any ultimate deformity of the head. The final result however depends very largely on how far the hydrocephalic process has been allowed to progress before the treatment is commenced.

The treatment consists in limiting the intake of fluid, in the case of a baby under one year of age, to 16–20 oz. in the 24 hours, and in encouraging the output of water by diuresis, diaphoresis, and purgation. By these means it is quite easy to prevent any further increase in the dimensions of the head, especially if the ossification of the cranial bones is at the same time accelerated by the exhibition of vitamin D and lime salts; but such treatment cannot repair any damage already inflicted on the substance of the brain, nor can it cure the non-communicating cases.

The mental prognosis in *mongolism* varies very considerably, partly with the extent of the anatomical deformities, and partly with the degree of muscular atony and progress of physical development. In mild cases with persistent administration of thyroid gland and pituitary extract (anterior lobe), both physical and mental development may be very satisfactory and almost normal. I have myself had several patients who have grown up and earned their own living and who have ultimately presented very little outward evidence of mongolism. More than 50 per cent. of mongols remain imbecile; about 75 per cent. show moderate degrees of mental defect, and about 25 per cent. only slightly impaired intelligence. Their expectancy of life runs parallel with their mental development. More than 50 per cent. die before puberty, and quite a large proportion before they attain to adult age. It is a great mistake to believe that all mongols are imbecile, or even seriously mentally defective; slight degrees of mongolism have been known to run through whole families, in which only a few members could be classified as mentally defective.

In *cretinism* the prognosis is very good indeed if appropriate treatment is adopted at an early stage of the disease, but it must be continued up to adult age and in some cases, those in which there is complete absence of thyroid function, it must be pursued indefinitely. If the treatment is delayed till after the end of the first year of life there is likely to be some permanent mental defect, though physical development may be little impaired. If delayed to the end of the third year, the child, if it survives, is likely to be an imbecile.

The infantile form of *amaurotic family idiocy* is confined almost entirely to the Jewish race. It usually commences in an apparently normal infant between the third and sixth month, and there is progressive muscular debility, blindness, mental degeneracy, and increasing apathy to the surroundings. The capacity to suck and swallow is gradually lost and death usually occurs before the end of the first year, and before the child has learned to say simple words or acquire any recognisable intelligence. The prognosis in this form of the disease is quite hopeless, both as regards mental development and expectancy of life. In the juvenile form of the disease, which commences at the second year or later, the child may attain to some degree of intelligence and may live as long as five years, and have some slight degree of reason.

MOTOR DEFECTS

Since it is by action of some kind, that is to say by movement, gesture, or voice, that expression can be given to the emotions, thoughts, and other activities of mind, it is clear that in the final issue we must judge of the quality and potentiality for development of an infant's brain by action and conduct rather than by the external appearances of the skull.

The behaviour of young infants is not at first under voluntary control, nor dictated by intelligence. Their actions are purely reflex and instinctive, but all the same a considerable amount of light is thrown on the probable course of development of the mental faculties by the manner in which these purely reflex actions are executed, and the way they are modified by practice and experience. More will be said on this subject when we come to deal with the defects of the special senses. Incoördination of simple motor functions often affords the earliest indication of future mental defect.

Mentally defective infants at a very early age show clumsiness in the performance of the automatic motor functions, such as sucking, swallowing, defæcation, and micturition, and readily develop troublesome habits and mannerisms in respect to any or all of them. Athetotic, choreic, and rhythmical movements of the limbs, fingers, or eyes, if they occur during early infancy, are of bad prognostic significance, as also are tremors, twitchings, grimacing, sardonic smiling, and other facial contortions.

Spasticity is not a very common accompaniment of ordinary forms of primary amentia, but in cases of spastic diplegia or Little's disease, hypertonicity of the muscles may so interfere with the execution of voluntary or reflex movements that the child is often credited with degrees of mental defect which are not ultimately realised. In all cases of spasticity in young infants, uncomplicated by anatomical anomalies or other external stigmata of degeneration, great care should be exercised in giving an unfavourable prognosis of the degree of mental deficiency, but this does not imply that a favourable prognosis is always justified. Quite a considerable proportion of children suffering from spastic diplegia, without evidences of birth hæmorrhage and without epileptic fits, develop into very intelligent adults, but they practically never grow out of the physical infirmities due to the muscular spasticity, and remain permanent cripples, able perhaps to get about on crutches and use their arms for operations which do not require very accurate adjustment, but cripples all the same.

Convulsions, especially when frequently repeated and occurring on insignificant provocation, are of bad prognostic augury. According to Tredgold's figures, convulsions occur in 56 per cent. of idiots, 43 per cent. of imbeciles, and 11 per cent. of feeble-minded children. The earlier they occur, the more frequently they are repeated, the longer the attacks, the more severe the convulsions, and the less amenable to sedative and other forms of treatment, the worse the prognosis. Although no statistics are available to show what proportion of babies suffering from convulsions during the first year of life ultimately become perfectly normal individuals, my own experience is that if some genuine and temporary reflex cause, such as intestinal colic in early infancy, or teething at a later date, can be proved to be responsible for the convulsions, or if indeed a condition of spasmophilia due to a low blood calcium predisposes to the fits, the prospects of complete recovery and disappearance of the symptoms are extremely good in at least 75 per cent. of the cases.

A condition of paralysis, general muscular feebleness, or *hypotonia*, with delayed ability to hold up the head, to sit up, or to perform coördinated muscular movements is highly indicative of some fundamental defect in the child's nervous organisation, and suggests a bad prognosis from the point of view of the ultimate mentality, unless some serious condition of malnutrition or rickets is present to explain the symptoms.

DEFECTS OF SENSORY FUNCTIONS

Since all infants acquire a knowledge of their surroundings, and thereby develop in intelligence, through the medium of their sensory functions, it is clear that their degree of educability will depend largely on the acuity of these senses and on their opportunities for exercising them. A combination of deafness, blindness, and anæsthesia in infants must inevitably lead to total amentia, because infants so afflicted have no opportunities of coming into relationship with the outside world and thereby becoming educated through experience. In assessing, therefore, the mental prospects of an infant suspected of amentia, it is important to estimate the degree and extent to which these various avenues of education are open or closed.

In my capacity of medical adviser to the infants' department of the National Institute for the Blind, I have often to decide whether applicants for admission to its Sunshine Homes for blind babies are sufficiently normal to benefit by the education provided. As blind babies, unless specially educated, are always mentally backward as compared with normal babies, it is sometimes extremely difficult to assess the prognosis correctly, and it is very easy to take too pessimistic a view of the future. The same is also true of deaf infants. A useful criterion in such cases is to determine the amount of compensatory acuity acquired by the unimpaired senses. Blind infants who are otherwise normal always show a considerable degree of educability of the unaffected senses—i.e., those of touch and hearing—whereas those who are mentally defective show little or none. Blind babies who are also mentally afflicted generally take no interest in music, or in playing with toys and didactic material, whereas those who are normal take a great delight in gramophone records, and at a very early age will take their part in chorus singing and jazz bands, and in playing with Montessori and other kindergarten didactic materials and apparatus.

Although the actions of young babies are at first purely reflex and intuitive, and under little voluntary control, nevertheless, the youngest infant is provided with automatic mechanisms which enable it to inhibit painful and unprofitable reactions, and modify, improve, or stereotype those which afford pleasant or agreeable sensations. Thus it is to some extent possible to distinguish between normal and mentally defective infants by observing the nature of their reflexes and the way they modify them by experience.

Normal infants rapidly improve and perfect the common reflexes connected with a number of organic functions concerned with the use of the hands, the grasping of objects, with sucking, swallowing, defæcating, micturating, &c., whereas infants suffering from various degrees of amentia continue to repeat purposeless and often painful reactions. For instance, they will persistently bang their heads on the floor or against a wall over and over again, although in so doing they may experience considerable pain, or they will try to put their hands in the fire although they may have been punished over and over again for so doing. You cannot train aments to be clean, to eat and drink tidily, neither can you prevent them from trying to eat dirt, or from putting sharp, pointed, or rough objects in their mouths.

Idiots or low-grade imbeciles do not learn by experience, and cannot be trained or educated. Mentally defective infants often cry incontinently without reason or object. They suffer from persistent constipation, and on very slight provocation contract habits of vomiting. It is true that perfectly normal infants will acquire the same kind of habits if they are brought up badly, but they will not do so under good conditions of nursery management. Aments of every degree are difficult to train in good habits, and difficult to break of bad ones.

The ordinary mental tests such as the Binet-Simon or the Merrill-Palmer, which demand on the part of the examinee an understanding of the spoken word and are only intended to be employed in the case of children over three years of age, have no application in the testing of the mental state of infants under one year of age.

The degree and rate of educability of the nerve-cell, as also the capacity for improving or suppressing undesirable reflexes, are among the most useful of the prognostic factors. In normal infants, both the motor and the sensory functions, as well as the early gleams of intelligence, exfoliate in certain definite order, and at more or less definite age-periods. Infants ought to be able to grasp objects, fix their eyes and recognise persons or objects, hold up their heads, sit up, crawl, walk, smile, frown, and make intelligible utterances by certain specific dates. If an infant cannot recognise its own mother at six months, seize its bottle at seven months, sit up at eight months, stand at fourteen months, say "Mum-mum" and Dad-dad" at sixteen months, there is something radically wrong with its nervous organisation, and some degree of defect may be suspected; but too much reliance must not be imposed on the failure of any one single coördination to develop or improve, especially that of talking. It is when there is delay and abnormality in the performance of a number of the voluntary muscular coördinations that their true significance becomes revealed. Mental defect may be suspected and the prognosis estimated by the extent of the retardation with respect to the development of these functions.

NUTRITION

Some degree of nutritional anomaly generally accompanies the more serious varieties of amentia during the period of infancy. In spite of good feeding, mentally defective infants often fail to put on weight at a normal rate, or in spite of limitation of food sometimes grow inordinately fat. They also at times show great vulnerability of the skin to external trauma, suffer from trophic sores, and other instances of nutritional disturbances.

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PSYCHOLOGICAL ASPECT OF SKIN DISEASE

ADDRESSING the Medical Society of Individual Psychology on April 11th, Dr. M. S. Thomson deprecated any tendency to assume that skin diseases are due to psychological factors, but gave examples of mental factors playing a part in their course. The most extreme perhaps is erythema pudicitiæ, an eruption which becomes manifest when a patient is stripped for examination before a person of the opposite sex. This is obviously nervous in origin. Dermatitis by artefact is very rare in compensation cases to-day and when error is made this is usually one of diagnosis; but artefact of the interest-demanding type is fairly common in young women and characterised by straight lines or angles, the patient's curious sidelong look, and the fact that a fresh site for the rash may quickly be found if comment is made on its absence.

Very occasionally, Dr. Thomson said, eczema results from strain—there is a classical case, associated with recurrent anxiety, recorded by Whitfield—but it almost always has well-recognised causes, though these may be detected only after exhaustive search. In lichen planus and psoriasis shock or overstrain is often a contributory factor; the former has been known to be resistant to all ordinary treatment and to disappear after a single lumbar puncture. Dermatitis herpetiformis was much more common during the strain of the war than now, and its course may vary directly with the degree of anxiety experienced by the patient: and the same may be true of rosacea. The capricious behaviour and sudden disappearance of infective warts may also be difficult to explain; nevertheless the causative virus has been isolated.

There are no psychogenic skin diseases, Dr. Thomson concluded, but there can be sensory neurosis of the skin either primary or grafted on to a pre-existing skin lesion.

BIRMINGHAM HOSPITALS CENTRE APPEAL.—Contributions to this appeal fund have reached a total of £740,276. The cost of collection has not exceeded 1 per cent.

SPECIAL ARTICLES

INCREASED BODILY GROWTH OF SCHOOL-CHILDREN SINCE THE WAR*

By Georg Wolff, M.D.
FORMERLY SCHOOL MEDICAL OFFICER IN BERLIN

The extent of growth in man is primarily a function of innate constitution. It is an old observation that tall parents tend on the average to have tall children. Apart from this everyday observation—to which there are of course exceptions as in any biological variable—the close relation between the mean bodily dimensions of the parents and those of their adult children has been established by the correlation studies of Francis Galton,[1] founder of eugenics, and of his fellow worker and successor, Karl Pearson,[2] founder of modern biometry.

These results of biometry must in the *statistical* sense be regarded as definitely ascertained as well as thoroughly in accordance with individual experience. Undoubtedly we have also whole series of observations which suggest an environmental influence on the rate of growth, its pre- and post-natal velocity, if we may express growth as a function of time. Thus many investigations have shown differences between the heights and weights of children of the same ages in elementary schools and in secondary schools which might be interpreted as showing a superiority of growth of the children on the average better economically situated, to be an effect of social environment, feeding, care, and other environmental components. On the other hand, some persons look upon this not as the result of a steady environmental influence, but rather as the effect of selection inasmuch as children with both mental and bodily superiority tend to be sent to the secondary schools. Thus the problem can hardly be interpreted unambiguously. There is a conflict of opinion; no convincing proof can be deduced from either a biological study of inheritance or the study of environment in favour of one or other hypothesis.

The fact, however, of the superiority in growth of the children in the secondary schools is, as a matter of anthropometric statistics, unchallengeable. It is true that some years ago the Munich pædiatrist Pfaundler[3] in an elegant study of growth gave a wholly different interpretation. He sees in the shooting up of children in the better situated classes, not a superiority in growth over the children of the people but the precise contrary, inasmuch as he compares this rapid growth of the well-to-do children with the rapid, but unhealthy, growth of hot-house plants. But Pfaundler's comparison will hardly withstand criticism.

The scholars in the secondary schools, not only in height but also in weight, are superior to children in elementary schools of the same age. Oettinger[4] in a very careful study in Germany has dealt with this matter, and in the course of his work has taken the opportunity of criticising various popular index methods, among others the Livi and Rohr index, which is unsatisfactory on account of its inconstancy, since with the normal growth from year to year it must become smaller. If actual weight is related to the normal weight, as can only be done by taking into account the correlation of age, size, and weight, as has been done in America by Baldwin[5] and in a German-speaking country by Pirquet,[6] then secondary schoolboys show in their development a superiority, on the average, over children of the less well-to-do classes. Again, Rösle and Böning,[7] in their comparative study of school measurements in Jena for the year 1880, and again in 1921, found nothing to confirm Pfaundler's view of a pathological precipitancy in growth attaching to the pupils of secondary schools. They would rather see in a rapid springing up of height "a finely begun experiment sidetracked, when in comparison with the normal growth, in height, growth in other directions has suffered pathological changes." As a factor of the general improvement in bodily development they see the rise in the standard of living—"it is indifferent whether one is dealing with a whole population (as in 1921) or with a single school category (for example, the economically better placed children in the higher schools)." As a factor of unharmonious growth they are inclined to consider schools—the school, which as an enemy of the body frequently impedes the growth from being harmonious on both mental and bodily sides.

However important for the school medical officer may be support from the aspects of the physiology and pathology of growth, in order to enable him to make demands on the school (indeed out of school), I am of opinion that one should not exaggerate the influence of the school. And so I come to my own investigations, carried out over nine consecutive years, of young children on whom the influence of the school *has not yet begun*; *differences in the rate of growth* of considerable significance appear in different years. With these I shall compare school leavers who have been subjected to the school influence for at least eight years. Perhaps here the conclusions of exact anthropometry may have some light to throw upon the problem of inborn constitution and environment and the bodily development of the growing human being, particularly the school-child.

School Entrants

The anthropometric studies I am about to describe were carried out during the first six years as part of my school medical work, and in the last three upon the work of my successor in the same district of Berlin, using the same methods and material. The data relate to entrants in the years 1924–32, and to leavers who in the years 1925–33 were medically examined in connexion with choice of occupation. Those belonging to the first three entrance years, 1924–26, are derived from the birth years 1917–18 to 1919–20, that is to say, they were born in the worst period of privation of the German people; on the basis of eight years' schooling the leavers of 1932 belong to these birth years. The results bear the stamp of an individual statistical character; the collection of the original material, measurements, weighings, and their statistical elaboration were all controlled by one individual. The numbers in individual years are, however, as the computed errors of random sampling show, so large that some general conclusions as to the effect of under-nourishment on the growth of children cannot be rejected. Also there is evidence that this growth deficit is made up before puberty.†

The measurements were made in the spring of each calendar year, four to five weeks before the end of term (April 1st), or three months before leaving school

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* A lecture delivered in the London School of Hygiene and Tropical Medicine (University of London) on March 1st, 1935.

† Precise methods of statistical anthropometric elaboration are described in detail in my monograph [8] to which the reader is referred for further demographic and medical details.

TABLES I. AND II.—BODILY GROWTH OF SCHOOL ENTRANTS (A) BOYS AND (B) GIRLS DURING 1924–32

Height in cms. and weight in kilos. Average values (arithmetic mean ± mean error)

(A) BOYS

Year.	Age in years.					
	No.	5½–6	No.	6–6½	No.	6½–7
1924	105	106·63 ± 0·459 18·65 ± 0·203	127	108·69 ± 0·464 19·19 ± 0·171	85	108·93 ± 0·588 19·52 ± 0·293
1925	84	107·25 ± 0·494 18·54 ± 0·202	135	110·02 ± 0·385 19·70 ± 0·180	47	110·23 ± 0·700 19·39 ± 0·342
1926	181	108·82 ± 0·347 19·02 ± 0·152	267	110·58 ± 0·321 19·72 ± 0·138	67	110·90 ± 0·686 19·64 ± 0·323
1927	175	111·11 ± 0·382 19·17 ± 0·163	226	113·61 ± 0·342 19·86 ± 0·149	63	113·33 ± 0·578 19·46 ± 0·301
1928	148	111·33 ± 0·420 19·31 ± 0·175	177	113·72 ± 0·401 20·26 ± 0·180	35	113·91 ± 0·928 20·11 ± 0·481
1929	93	111·77 ± 0·577 19·79 ± 0·264	134	112·99 ± 0·408 20·06 ± 0·201	32	113·37 ± 0·670 19·38 ± 0·337
1930	137	111·73 ± 0·387 19·46 ± 0·191	136	114·76 ± 0·420 20·15 ± 0·220	36	114·11 ± 0·802 19·61 ± 0·404
1931	126	113·05 ± 0·433 19·91 ± 0·194	179	114·68 ± 0·348 20·16 ± 0·167	37	115·14 ± 0·735 20·54 ± 0·449
1932	136	112·68 ± 0·431 19·72 ± 0·198	178	114·86 ± 0·372 20·37 ± 0·182	45	114·76 ± 0·778 19·73 ± 0·327
			(B) GIRLS			
1924	94	105·95 ± 0·486 17·87 ± 0·194	129	107·97 ± 0·417 18·36 ± 0·200	68	110·04 ± 0·730 18·79 ± 0·263
1925	85	107·32 ± 0·572 18·64 ± 0·297	127	109·50 ± 0·435 19·14 ± 0·200	50	110·22 ± 0·629 19·07 ± 0·281
1926	175	108·25 ± 0·335 19·08 ± 0·190	258	110·06 ± 0·303 19·54 ± 0·154	62	111·19 ± 0·677 19·43 ± 0·319
1927	189	111·00 ± 0·345 19·09 ± 0·183	219	113·68 ± 0·327 19·98 ± 0·182	72	113·65 ± 0·640 19·36 ± 0·288
1928	141	110·57 ± 0·449 19·38 ± 0·259	148	113·07 ± 0·397 19·66 ± 0·191	39	112·85 ± 0·781 19·94 ± 0·480
1929	99	110·13 ± 0·497 19·25 ± 0·288	134	112·51 ± 0·458 19·74 ± 0·216	53	114·32 ± 0·723 20·40 ± 0·387
1930	114	111·23 ± 0·396 19·18 ± 0·195	130	113·44 ± 0·482 20·30 ± 0·280	44	114·11 ± 0·908 19·88 ± 0·455
1931	124	112·01 ± 0·405 19·33 ± 0·195	159	114·09 ± 0·432 19·80 ± 0·201	32	114·19 ± 0·988 19·78 ± 0·440
1932	133	111·84 ± 0·478 19·21 ± 0·275	151	114·46 ± 0·380 19·93 ± 0·201	46	113·98 ± 0·584 19·21 ± 0·292

No. = number of (A) boys and (B) girls examined.

(Easter and Michaelmas). They were therefore made under approximately equal conditions, and the same measuring apparatus in the school medical officer's consulting-room was used by a specially experienced and controlled staff. Children clothed only in shirts were classified after measurement according to Martin's[9] nomenclature.

Berlin entrants only come to school at one time in the year, not as formerly at either Easter or Michaelmas. Consequently differences in the ages of school entrants to-day are larger than they used to be. They extend normally, without taking account of postponed entrants, over as much as fifteen months (at a usual age of entrants from 5½ to 6¾ years). A subdivision into half-yearly classes is necessary, and in the tables that follow I have divided entrants into the three age-group—5½–6, 6–6½, and 6½–7, as well as by sex.

In Tables I. and II. we have anthropometric results for 6265 entrants, namely, 3191 boys and 3074 girls, and in Table IV. for 4743 leavers, namely, 2448 boys and 2295 girls, subjected to school medical inspection during the period; that is to say, we have reasonably large numbers. Heights and weights of children are biological characters, the measurement of which, given an accurate apparatus and attentive use, is practically independent of subjective impressions.

It will be seen concordantly in boys and girls, year by year, that there is a distinct increase in the mean value of both height and weight. Particularly striking is the sharp difference between 1926 and 1927; here the increases in growth over a year amount to 2–3 cm. both in boys and girls in each of the three of the half-yearly classes, whereas since 1927 only a slight change appears. We have not therefore had a uniform increase from year to year, but rather a discontinuous process. This is of importance in the interpretation of the phenomenon of growth. The gross difference between the means of 1924 and 1932 ranges from 5·9 to 6·5 cm. in height and from 1·07 to 1·57 kg. in weight. A consideration of the standard errors of sampling shows that we have to deal with differences which, in the technical statistical sense, should be regarded as significant. The entrants are now taller than their predecessors. The increase of weight is equally striking. Errors of random sampling are computed in the next table for the differences in measurements between 1924 and 1932. (Table III.)

This shows that from 5½ to 6 years and 6 to 6½ years for both sexes the mean increase is more than three times its standard error, and is apparent in both age-groups. We have not quite so clear a case in the older entrants from

6½ to 7 years. This is of importance to the school medical officer and teacher from the practical point of view. From my measurements it appears that in every calendar year the older entrants from 6½ to 7 years show very little advantage, both in respect of height or weight; indeed, sometimes a disadvantage when compared with children six months younger. We seem to have in these older entrants the result of a sort of negative selection. Some of these children are children who were referred back by the school medical officer or were kept back by the parents in the previous year as being too weakly. The number of these is, of course, relatively small and the average measurements of these older entrants should not be regarded as normal values for their age class. Really they should be completed by the numbers of children of the same age who have already been a year at school.

In general, the impression derived from this analysis is that growth in the height of children is plainly influenced by environmental factors, particularly by the amount of nutrition provided before and after birth. We must not lose sight of the fact that the *births*, of the rather small entry in 1924 and 1925 and partly also of that of 1926, fell into the period of serious food shortage of the German people, namely, 1917–19. Children born then still showed six years later—school inspection years 1924–26—a distinct growth deficit, in my experience, in comparison with earlier and, still more, later born entrants. It is in the year 1927 that all three age-groups of both sexes first showed approximately stable values and we may say that we had reached from the phenotypic point of view a normal year, that is to say, one in which the structures capable of growth are no longer affected by the influences of a period of scarcity.

TABLE III.—HEIGHT AND WEIGHT OF YOUNG SCHOOL-CHILDREN FROM 1924–32

(Difference in cm. and kg. ± mean error*)

Year.	5½–6 years.		6–6½ years.	
	Height.	Weight.	Height.	Weight.
		BOYS		
1932	112·68 ± 0·431	19·72 ± 0·198	114·86 ± 0·372	20·37 ± 0·182
1924	106·63 ± 0·459	18·65 ± 0·203	108·69 ± 0·464	19·19 ± 0·171
Difference ..	6·05 ± 0·630	1·07 ± 0·284	6·17 ± 0·595	1·18 ± 0·250
		GIRLS		
1932	111·84 ± 0·478	19·21 ± 0·275	114·46 ± 0·380	19·93 ± 0·201
1924	105·95 ± 0·486	17·87 ± 0·194	107·97 ± 0·417	18·36 ± 0·200
Difference ..	5·89 ± 0·682	1·34 ± 0·337	6·49 ± 0·564	1·57 ± 0·284

* Calculation of mean errors of differences from the formula: standard error of difference of means $= \sqrt{m^2_1 + m^2_2}$.

We have here, perhaps for the first time, an anthropometric study based on statistically adequate numbers of the after-effects of under-nutrition on growth in height and weight of the generation born in the hunger years of the war down to the close of early childhood. While the immediate effects of undernourishment on the human population were well enough known in the war years themselves, they were smoothed out in the first years after the war. Thus Schlesinger [10] reports that in school-children already in 1922–23 previous defects in weight were compensated by an abnormal increase in weight. Rösle and Böning even maintained that 1921 was, in their experience, a normal year, so that by then the war effects were almost compensated. This is, however, as we have seen above, not quite exact.

Our investigations of entrants relate to children born in the later years of the war. These children came into the world with body-weight less than normal, as Peller [11] has unambiguously demonstrated in the Viennese population, and suffered from this retarded growth still longer. These results of prenatal environmental influence, particularly the state of nutrition of the mother, on postnatal growth in height and weight are not without importance to the social hygienist, perhaps also in the biological study of inheritance. They confirm on mankind by means of the involuntary experiment of war-time nutrition what a student of heredity, Agnes Bluhm [12] had already found and statistically demonstrated in numerous animal experiments upon the retardation of growth in mice with low birth weights. In these large-scale researches, the simple correlation between weight at birth and body-weight at later ages was found. "Es treten dementsprechend reifere Früchte mit einem höheren Gewicht in das 'Kleinkindalter' ein als wenige reife," says Dr. Bluhm, of her generations of mice.

Our own studies of the variation in school entrants show that this may be generalised from animal experiments to the growing human beings. For our observations demonstrate with sufficient clearness that any deprivation of the mother due to emergency rationing does not pass without an unfavourable effect upon the height and weight of her children. Accordingly statistical deductive methods applied to the mass phenomena of human society are equal in value to experimental inductive methods provided changes receive their appropriate analysis. We reach for the human population the same conclusions as Bluhm derived from her experiments on animals, namely, that the intra-uterine rate of growth, while mainly determined by heritable influences, nevertheless is influenced by the environmental factor of nutrition and, above all, is subject to further postfœtal retardations; now studies of this can be followed to the end of early childhood. This dependance of growth in height and weight is parallel with the frequently observed retardation in school-children from economically unfavourable situated strata as compared with better placed children of the same age.

In the further course of these studies, which at first were confined to the years 1924–28, the economic world crisis developed with, particularly in Germany, increasing unemployment. Very soon in the press and in political and scientific circles the question was asked, "Has the economic world catastrophe made itself evident in the state of health of our people, as, for example, was the case in the war hunger years?" Were this so, it would be a question of the immediate effect of defective national nutrition. On this account

TABLE IV.—BODILY GROWTH OF SCHOOL LEAVERS—BOYS AND GIRLS—DURING 1925–33
Height in cms. and weight in kilos. Mean values (arithmetic mean ± mean error)

Year of leaving.	BOYS.				GIRLS.			
	No.	13½–14 years.	No.	14–14½ years.	No.	13½–14 years.	No.	14–14½ years.
1925	153	146·4 ± 0·560 38·9 ± 0·467	216	147·2 ± 0·521 39·1 ± 0·396	148	148·4 ± 0·626 42·6 ± 0·582	140	149·3 ± 0·631 43·5 ± 0·563
1926	192	147·1 ± 0·589 40·1 ± 0·472	188	147·9 ± 0·624 40·5 ± 0·505	177	149·7 ± 0·475 44·2 ± 0·554	158	149·1 ± 0·558 43·7 ± 0·544
1927	279	149·3 ± 0·571 41·0 ± 0·434	159	149·8 ± 0·678 40·9 ± 0·516	147	151·4 ± 0·548 44·9 ± 0·576	122	153·0 ± 0·666 45·5 ± 0·633
1928	159	150·4 ± 0·655 41·0 ± 0·521	99	150·9 ± 0·784 41·3 ± 0·681	152	152·0 ± 0·472 44·9 ± 0·520	102	153·2 ± 0·709 45·8 ± 0·728
1929	127	150·6 ± 0·610 41·4 ± 0·533	93	154·6 ± 0·894 43·7 ± 0·757	120	153·2 ± 0·616 45·3 ± 0·604	121	152·3 ± 0·584 45·9 ± 0·642
1930	102	152·8 ± 0·748 43·1 ± 0·757	91	154·3 ± 0·771 44·9 ± 0·695	162	152·9 ± 0·633 47·0 ± 0·738	160	152·7 ± 0·668 46·1 ± 0·791
1931	115	152·2 ± 1·129 42·0 ± 0·891	48	150·4 ± 1·563 40·7 ± 1·351	140	154·1 ± 0·763 46·1 ± 0·915	54	153·9 ± 1·145 46·9 ± 1·229
1932	132	152·7 ± 0·860 42·7 ± 0·623	111	155·7 ± 0·769 45·1 ± 0·672	142	154·1 ± 0·571 46·4 ± 0·674	107	155·1 ± 0·550 47·1 ± 0·683
1933	123	153·6 ± 0·690 43·6 ± 0·724	98	155·5 ± 0·741 44·6 ± 0·792	135	154·2 ± 0·604 46·3 ± 0·654	98	155·4 ± 0·586 47·5 ± 0·739

anthropometric measurements on school entrants were continued; contrary to the expectations of many, as the figures in Tables I. and II. show, there was in fact no decline in the measurements of entrants in these years; on the contrary, there was even a small increase which, however, was well within the limits of random error. Further, the slight losses of weight in some half-yearly classes of the entrance years 1929 and 1932 are also, for the most part, within the reasonable bounds of chance fluctuation. At the most we may say that the average increase of weight does not quite keep pace with that of height, which is not in conflict with biological expectations, for the juvenile organism regularly lays down the building stones of the growth impulse, first in respect to length and only afterwards with respect to mass (see Schlesinger[10]).

On the whole we may say that the heights and weights of the entrants of a given age, since 1927, remained practically constant with a small upward tendency.

School Leavers

The results so far discussed relate to entrants in 1924–32; they must be completed by similar measurements on leavers obtained in the same administrative district in the years 1925–33. Medical examination, in connexion with the choice of a career, usually takes place three months before leaving, and the statistical anthropometric elaboration followed the general rules described above. It is, of course, of particular practical and scientific importance to learn something about the further bodily development during the years of schooling, at any rate at the beginning of puberty. Do the retardations in growth of the 1924–26 entrants persist or, in the course of the eight years of school life, which for the most part were of normal nutritional conditions, do we find a levelling out? *An exact comparison can only be given when the entrants in normal years become leavers.* However, the anthropometric results on leavers of the later years in comparison with earlier leaving years show a general improvement as will appear from Table IV.

From this Table, which sets out the averages and appropriate standard errors, we may draw the following conclusions. It appears again, as in the entrants, that a regular increase in height and weight has occurred in both half-year classes and for both sexes. In boys of the same age this increase in height in the course of the study amounts to 7–8 cm., in weight to, roughly, 5 kg.; in girls of the same age the increase in height is approximately 6 cm., in weight

TABLE V.—INCREASES IN HEIGHT AND WEIGHT OF SCHOOL LEAVERS FROM 1925–33
(Difference in cm. and kg. ± mean error*)

Year.	13½–14 years.		14–14½ years.	
	Height.	Weight.	Height.	Weight.
		BOYS		
1933	153·6 ± 0·690	43·6 ± 0·724	155·5 ± 0·741	44·6 ± 0·792
1925	146·4 ± 0·560	38·9 ± 0·467	147·2 ± 0·521	39·1 ± 0·396
Difference ..	7·2 ± 0·889	4·7 ± 0·862	8·3 ± 0·906	5·5 ± 0·885
		GIRLS		
1933	154·2 ± 0·604	46·3 ± 0·654	155·4 ± 0·586	47·5 ± 0·739
1925	148·4 ± 0·626	42·6 ± 0·582	149·3 ± 0·631	43·5 ± 0·563
Difference ..	5·8 ± 0·870	3·7 ± 0·875	6·1 ± 0·861	4·0 ± 0·929

* Calculated from the formula: standard error of difference of means = $\sqrt{m_1^2 + m_2^2}$ (see Table III.).

approximately 4 kg. It should be remembered that girls in these age classes, as the Table shows, on account of the greater filling out of the figure associated with the earlier stages of puberty surpass boys in height and particularly in weight. It is only in the later stages of puberty that boys again take the lead in weight and height.

From the individual analysis year by year we may infer that, in contradistinction to the observations upon entrants, the increase has been a continuous one with deviations in particular years as one would expect from the statistical point of view. A sudden increase in all half-year classes for both sexes, as was noted among the entrants *between 1926 and 1927*, is not here observed; there is a greater increase perhaps for 14–14½-year-old boys between 1928 and 1929, but only in these, and this has no special significance since these individual values are subject to a high probable error. The range of variation, both in height and weight at the age of puberty, is somewhat wide, as is also therefore the standard deviation, when the number of leavers measured, particularly at ages from 14–14½ years, has become smaller in recent years for various reasons (decline in the birth-rate, changes in age of entrants, decrease in the school medical district). Consequently the standard error taken in the form $E_m = \frac{\sigma}{\sqrt{n}}$ has increased in recent years, and the range of these studies might profitably be extended by similar investigations in other countries and cities.

On the whole, however, the increases in height and weight which make themselves manifest in the period 1925–33 in the leavers must be regarded as significant; as a simple arithmetical calculation shows if one compares the beginning and ending values of the period of investigation and compares the differences with their standard errors as is done in Table V.

The considerable differences both in stature and weight lie beyond the ordinary limits of chance fluctuations, being in all four instances more than three times the standard error of the difference. Our children are, therefore, really bigger as appeared from the anthropometric investigation of entrants. A retardation in the bodily development of leavers in the years 1931, 1932, 1933, that is to say, those corresponding to the birth years from 1916–17 to 1918–19, does not appear when comparison is made with the previous years. There can, therefore, be no doubt in inferring that the growth retardation of war birth years, still manifest at the age of school entrants, has in the course of further growth, namely, in the period entering upon puberty, been compensated, always provided that no new dangers to nutrition occur. This is a positive and, in my opinion, important result of the investigation of leavers in a particular area; it makes it probable that among them as among entrants no new retardations of growth can be charged to the economic crisis.

Discussion

An increase in the rate of growth in the post-war time cannot be doubted. In this lecture it has been substantiated by means of systematic measurings and weighings of school entrants and school leavers year by year in Berlin, analysed by statistical methods. Within the nine-year period of investigation an increase in stature for entrants has amounted to from 6 to 6·5 cm., and for leavers, after eight years' schooling, to from 6 to 8 cm. on the average; the increase of weight in entrants has amounted to from 1·0 to 1·5 kg. on the average, in leavers it has amounted to from 4·0 to 5·5 kg. These increases are beyond the range of probable chance fluctuations. Our children are therefore really bigger.

The tendency to increase of growth in civilised men has long existed, as recruiting statistics for many countries and sporadic measurements of children in earlier times demonstrated. The cause of this increase in growth should be looked for in the general improvement of social and economic conditions, among these, of national nutrition. This improvement of nutritional conditions was first interrupted by the world war, particularly in Germany and Austria. That showed itself in the increase in mortality from tuberculosis, as well as in the decrease of bodily dimensions. After this famine crisis repair of the disturbance of growth both in children and in adults set in rapidly; restoration of bodily dimensions was, however, still interrupted by the after-effects of the war years of births. This was a late consequence of the scarcity. This is clearly seen in the investigation in the low measurements of school entrants from 1924–26, that is to say, years of birth 1917 to 1919–20; it also appears, however, that this retardation of growth did not persist for the school leavers. These older children born in the war years have made up their growth deficit. A permanent injury did not result.

These results of current measurements on school-children are of fundamental importance for the problem of the physiology of growth; they show, in fact, that the speed of growth in man, the tempo of which in the individual is determined primarily by inborn factors, may nevertheless be distinctly influenced by environmental factors, particularly the factor of nutrition from intra-uterine life to puberty. This dependence is parallel with differences in the growth of children in elementary and secondary schools, and these differences should be regarded as environmental rather than genotypic variations.

Connected herewith is the conclusion that the anthropometric method is of practical value in the judgment of individual cases, if standard tables, preferably prepared from a correlation of stature and weight and age, are available; but the method is also indispensable in the determination of population figures when comparative data from year to year are available. Here the school medical service has graver responsibilities than the pioneer worker, and has to work in defence of proper standards. Later on, the statistical elaboration of normal tables prepared from time to time, perhaps in connexion with the census enumerations, should be available and should prove an important instrument in the practice of demographic hygiene.

In stressing the environmental factors of growth I naturally do not mean to cast any reflection upon the great investigators, such men as Gregor Mendel, who, in the spirit of Newton's famous motto, *hypotheses non fingo*, have revealed, and will reveal the fundamental mechanisms of hereditary transmission. But I do venture to suggest that the facts I have described should give us some comfort in these days of depression when so much is heard of the degeneration of civilised peoples and of the danger of civilisation.

No doubt civilisation *is* in danger; it always has been in danger. Great emotional disturbances of the peoples of the world have always, for better or for worse, affected the material structure of human society. The apocalyptic horsemen—War, Hunger, and Pestilence—have ridden through Europe more than once; the generation now in being has seen them and will never forget the signs of their passage. But the hygienist, recalling the state of Europe in 1918–19, and comparing what then was with what now is, can encourage his colleagues in the field of statecraft, for progress in the field of public health—as illustrated by the figures I have given—is manifest. We may have the courage to repeat the words used by your great political philosopher, Edmund Burke, writing in a time of scarcity and depression, "Let us be saved from too much wisdom of our own, and we shall do tolerably well."

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MEDICINE AND THE LAW

Inquests after Executions

WHEN a capital sentence is carried out in England the coroner must hold an inquest within 24 hours and the jury must inquire into and ascertain the identity of the body and whether judgment of death was duly executed upon the offender. At Wandsworth Prison on April 16th the coroner's jury which inquired into the death of Percy Charles Anderson (executed for the murder of Constance Drew-Bear of Brighton) demanded to see not only the body but also the scaffold. This excess of conscientiousness in the performance of the jurors' unattractive duties seems to have caused some difficulty for the governor of the prison who apparently stated that a special order from the Home Secretary would be necessary. There was some discussion about an adjournment for this purpose, but in the end the governor gave way while protesting against the creation of a precedent. The foreman of the jury cogently argued that in ordinary inquests the instrument causing death, such as a revolver or a razor, is produced; how could the jurors of their own knowledge properly declare the method of death unless they saw the instrument whereby Anderson's life was taken? The jury duly saw what it wanted and the usual verdict was returned.

The governor presumably relied upon some domestic order from the Home Office. The Capital Punishment Amendment Act of 1868 (which abolished public executions in cases of murder, though they are apparently still proper in cases of treason) authorises the Secretary of State to make rules and regulations "for the purpose as well of guarding against any abuse in such execution as also of giving greater solemnity to the same and of making known without the prison walls the fact that such execution is taking place." The present rules, made in 1902, briefly say that the mode of execution, and the ceremonial attending it, shall be the same as heretofore; a public notice of the date and hour appointed for the execution must be posted on the prison gate 12 hours before the execution and must remain until the inquest has been held; and the bell of the prison or of the neighbouring parish church must be tolled for 15 minutes after the execution. In all this there is nothing to exclude the coroner's jury from the scene of the hanging. "Jervis on Coroners" states that it is usual for the governor to let the jurors visit such parts of the prison as may help them to understand the case and to observe the prison routine. If so, the governor at Wandsworth seems to have been needlessly concerned over precedent. While capital punishment is retained, the Home Office may perhaps rewrite its rules; some fresh provision seems necessary to deal with the unedifying struggles between demonstrators and police now witnessed outside the prison walls.

Police Inquiries and Medical Secrecy

The chief constable of Hove has provided a fresh problem of professional secrecy. In his efforts to solve the mystery of what is known as the Brighton trunk crime Number 1, he inquired of all local medical practitioners whether any woman of the age and condition of the victim had sought advice and had subsequently failed to put in an appearance. The inquiry is natural and proper as a matter of routine in criminal investigation. If a diamond necklace disappears, the police would ordinarily circularise all jewellers and pawnbrokers. If a fragment of clothing is a possible clue to the identity of a body, outfitters, manufacturers, and laundresses would normally be expected to throw what light they could upon the mystery. So also the police may well feel it worth while to try the medical profession for a missing patient. The doctor, if aware that a patient has suddenly disappeared and that an unidentified body has been found, could hardly do less than coöperate. The duty of secrecy wears a different aspect if the patient is dead.

Do these considerations justify the police in insisting that the doctor shall furnish a list of his patients and a catalogue of their ailments? Of course not. Quite apart from any issue of professional etiquette, there is no legal compulsion to answer the interrogatories of the police unless there is some express statutory duty. The Official Secrets Act of 1920 is a case in point. There Parliament declared that failure to give information to the police on demand should be punishable as a misdemeanour. This provision, permanently reproducing a war-time regulation against spying, is one of the most arbitrary in the whole statute book. Its surprising inclusion among our peace-time laws is an eloquent indication that no such duty to answer a policeman's questions normally exists.

Medical practitioners may safely be left to decide for themselves how far they feel able to assist when appealed to as in the Brighton case. Some doctors feel impelled to guard professional confidences with special vigilance when it is the police who ask for information. Others incline to remember that doctors are also citizens and owe a duty to the community. It is a matter for individual consciences. It is by no means inconceivable that details disclosed by a doctor to the police about a patient believed to be dead might, through error or misunderstanding, give rise to a grievance (with a potential claim to damages) against the doctor on the part of a patient who in fact is still alive. If the State is going to ask a doctor to run these risks as a matter of course, does it propose to indemnify him against the possible consequences?

CHELSEA HOSPITAL FOR WOMEN.—At the annual meeting Lord Londonderry, the chairman, said that the hospital income would probably be some £1800 less than last year, and urgent requirements to be carried out would increase their commitments by £1500. The number of patients admitted had increased, but the enlargement of the east block had made it possible to reduce the waiting-list, while the paying floor was increasingly used.

VIENNA

(FROM OUR OWN CORRESPONDENT)

HAS INSULIN HELPED ?

Prof. W. Falta, addressing the Gesellschaft der Aerzte, has been giving his views on the expectation of life in diabetes. It is agreed, he said, that the disease is on the increase in all countries with a high western civilisation. The hopes aroused by the discovery of insulin have been fulfilled only in part. The experience of the last ten years has shown that mortality in the wealthier classes has fallen, so that the average diabetic lives longer; but among poorer people the effect is less obvious. In considering the value of insulin, however, one must discriminate between the various types of diabetes—notably the insulin-sensitive and the insulin-resistant. There are severe cases needing comparatively little insulin, and mild cases requiring a lot; diabetic children are mostly insulin-sensitive, but later in life they become resistant. Sensitiveness to insulin is associated with a "consumptive" type of disease, with ketosis and polyuria, whereas resistance goes with obesity, premature hypertension, and little tendency to ketosis. The first group, which are probably of purely insular origin, had formerly a poor prognosis; and here the use of insulin has altogether changed the outlook, so that even children will develop beautifully under its administration. In the non-insular (or rather extra-insular) cases dietetic measures play a more important part and more insulin is needed; the diabetes is constitutional in origin and complications are common. Nowadays, however, no patient in either group should lose his life in diabetic coma.

In summary, Falta's view is that despite the use of insulin the deaths from diabetes have increased. The reason, he holds, is that, thanks to the remedy, a larger number of diabetics are alive at the same time. Mortality has decreased in the earlier age-groups; in the later it has risen, because more patients live long. As the poorer classes are unable to maintain the necessary régime and diet they have a relatively high death-rate. On the other hand, hundreds of thousand of diabetics owe their life and capacity for work purely to the use of insulin.

CARCINOMA OF THE LARYNX

The Vienna Laryngological Society lately listened to a review by Prof. M. Hajek of the work on cancer of the larynx done during his directorship of the Vienna Laryngological Clinic from 1919–34. He reported on 393 cases operated on, and the trend of his paper was to show that provided radical extirpation is done the prognosis is not as bad as is supposed. In the early days there was great difficulty in getting the patients to consent to the mutilating radical operation. In the first few years after the war their general condition was so bad (dental caries, malnutrition) that laryngo-fissure was resorted to in many cases that might otherwise have had a more extensive operation; hence the indication for laryngo-fissure is not so strict in this series as in others published. Hajek also preferred this operation for patients over seventy on the ground that in old people the malignant process seems to be less progressive. Of the 79 patients treated by laryngo-fissure 44 per cent. lived for more than three years after operation, while 15 per cent. died within twenty days. Of those surviving more than three years 34 per cent. lived for more than ten years, and there was no recurrence in cases where the strict indications for laryngo-fissure could be kept. Total extirpation was done in 279 cases, of which 89 were classified as intrinsic cancer. Of these 19 per cent. died within twenty days, 32 per cent. lived up to three years (with 22 per cent. of recurrences), and 34 per cent. over three years (4 per cent. of recurrences). Of the 152 patients with extrinsic cancer 25 per cent. died within twenty days, 48 per cent. lived up to three years (with 38 per cent. of recurrences), and 17 per cent. over three years (only 1·5 per cent. of recurrences). It has to be borne in mind that extrinsic carcinoma of the larynx necessarily carries an exceedingly bad prognosis if left untreated. In all these cases the associated lymph glands were completely removed, and the figures show that secondary implication of the glands is not an absolute contra-indication to operation. In the 43 cases in which an incomplete operation only could be performed radiotherapy (radium or X rays) was always employed. Prof. Hajek's paper dealt only with surgical measures, but he offered the opinion that it is very useful to follow operation by irradiation. He is not yet prepared to give a definite verdict on the value of Coutard's method of X ray therapy, since it has not been long enough in use for an estimate of late results. As for surgery, he believes that operation is justifiable even in cases of doubtful prognosis, since it gives a fair chance of recovery, for a time at least.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

TEACHING OF NEUROLOGY

Prof. Edwin Bramwell retired from the chair of clinical medicine at Edinburgh University at the end of last year, but we are glad to know that he is to continue clinical teaching in neurology at the Royal Infirmary. Arrangements are to be made for him to deliver a clinical lecture every Saturday at midday, which will be open to any who attend the Infirmary teaching, and he will hold a neurological clinic in the medical out-patient department every Monday at 2 o'clock. This should be of great convenience to medical practitioners and members of the Infirmary staff, who will be able to refer cases to this clinic for Prof. Bramwell's opinion. It should also prove attractive to students and especially to post-graduates working in the hospital.

SPECIALISATION

Edinburgh teachers insist that their main duty is to teach the medical student to be a general practitioner, and they are critical of the over-development of specialisation. A disadvantage of the present arrangement, however, is that the cases of, say, heart disease are scattered throughout the various charges and are not readily accessible to those who wish to become expert in that subject. There is much to be said for the view that students should be taught by general physicians and even by general practitioners, but a certain amount of specialisation is obviously essential. It would be particularly gratifying if the Edinburgh school could develop specialisation to an efficient degree while at the same time preserving the present features of its clinical teaching. Prof. Bramwell's new clinic may inaugurate a happy solution of the problem. A little coöperation by members of the medical staff will enable a large proportion of the neurological staff entering the hospital to be seen in the neurological clinic. If the scheme proves popular, clinics for other specialties may develop in due course, without interfering with the general features of the hospital teaching.

On the surgical side the position is rather different. A medical specialist is of distinct value for the *diagnosis* of disease, since the treatment he advises can usually be carried out in the general ward. The surgical specialist, on the other hand, practises a method of treatment which he has perfected, and must therefore have beds at his disposal. To meet this necessity the surgical staff tend to favour the development of larger units within which specialties may be developed by the more junior members.

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

A FACULTY OF MEDICINE IN BRISBANE

THE Queensland Government, in considering extension of the health services of the State, has appointed a committee to advise on the establishment of a faculty of medical science in the University of Queensland. There is already a faculty of dentistry.

A JUBILEE APPEAL

On April 5th both houses of the Commonwealth Parliament adopted an address of loyalty to the King to mark the twenty-fifth anniversary of his succession. At the same time the Government launched an appeal for the King George V. and Queen Mary Maternal and Infant Welfare Memorial Fund, to be established as Australia's commemoration of the Silver Jubilee. From its own revenue the Commonwealth Government will give £50,000, and contributions will also be made by the State governments. A special appeal has been made by the Governor-General, and the acting Prime Minister states that the Royal Australasian College of Surgeons, the British Medical Association, nurses' and women's organisations, and industrial associations are being invited to coöperate. The Government proposes that the money collected shall be spent by State agencies through existing channels and on a few main objects. One aim is to secure a measure of uniformity while reserving the general principle of local control. Attention will be paid to post-graduate courses for doctors, the instruction of medical students in obstetrics, the theoretical and practical training of midwives and nurses, the establishment of a self-contained maternity hospital unit, and better equipment and improvement of existing institutions, both in the country and in the city.

The rate of maternal mortality in Australia is higher now than it was in 1911, and it rose from 4·72 per 1000 live births in 1921 to 5·13 in 1933. Although the general death-rate has fallen and infantile mortality has steadily decreased, the death-rate of infants in the first week of life has remained almost stationary.

PANEL AND CONTRACT PRACTICE

Title to Medical Benefit

PRACTITIONERS are sometimes in doubt as to when a person newly insured becomes entitled to medical benefit. There is, of course, no waiting period for medical benefit as there is for sickness benefit; the fact of being insurably employed confers an immediate title to medical benefit. Some years ago a boy who was due to commence work for the first time on a Monday met with an accident on the previous Sunday and required treatment on the day on which but for his accident he would have commenced work. He had just left school and as he had not entered upon his duties no stamp had been affixed to a contribution card in respect of him, nor was one due. As, however, he was under a contract of service, the Minister of Health held that on the Monday he had become entitled to medical benefit and an insurance practitioner both claimed and received a fee in respect of a general anæsthetic administered for the setting of a fractured radius. Clause 7 (2) of the Terms of Service may be briefly paraphrased thus. If a person in applying for treatment represents that he is an insured person but cannot produce a medical card, the practitioner must give any necessary medical treatment; he may charge a fee by way of deposit, but in that event he must issue a receipt on the form G.P.4 provided by the committee for the purpose; he must issue a certificate if he would have been required to issue a certificate had the applicant been an insured person on his list; but he must not order drugs or appliances on an insurance prescription form until the applicant's title to benefit has been proved. In case of doubt it is wise to follow the procedure laid down in this clause. If the applicant is not entitled to benefit the doctor retains the fee. If he is entitled his name is added to the doctor's list as from the date on which treatment was provided and the deposit is refunded to the applicant and deducted from the practitioner's remuneration. If drugs are supplied by the practitioner he may, should the person be proved entitled to benefit, reclaim the cost from the insurance committee.

Leave of Absence

An insurance doctor recently applied for permission to be absent from his practice for a period of about twelve months in connexion with certain private business. Clause 11 (1) of the Terms of Service provides that all treatment shall be given by a practitioner personally, except where he is prevented by urgency of other professional duties, temporary absence from home, or other reasonable cause, and Clause 11 (2) lays it down that a practitioner shall not absent himself from his practice for more than one week without first informing the insurance committee of his proposed absence and of the person or persons responsible for conducting his insurance practice during such absence. Absence for twelve months could hardly be regarded as temporary absence from home, and the question to be decided is whether the cause given by the doctor for his proposed absence and for his non-fulfilment of the requirement as to personal service could be regarded as a reasonable cause. The practice falls within the area of three insurance committees and one of these committees has already decided in the negative.

Spinal Jackets

In July, 1934, regulations were made providing that, as from August 13th following, spinal jackets should be added to the list of appliances which may be prescribed for insured persons, when required for treatment of fractures, dislocations, or diseases of the spine. The Ministry of Health has now intimated that after consultation with the Insurance Acts Committee the list of drugs and appliances appended to the distribution scheme will be extended to include this appliance. As and when insurance committees amend their areal distribution scheme it will be possible for practitioners either to prescribe or to arrange for the supply of spinal jackets in the circumstances mentioned. In the latter event they will of course be entitled to recover the cost from the committee.

What is a Partnership ?

An insurance committee has approached the Ministry of Health with a view to determining whether the reference in the Terms of Service to a partnership refers to the whole of the practice or not. It appears that this question was considered years ago and that it was then held that the term "practice" in Clause 11 (8) must be construed to refer to the whole of the practice in respect of which the partnership exists. If the partnership exists only with respect to insurance practice the word would have to be construed accordingly.

PUBLIC HEALTH

Boarding-out of Mental Patients

THE twenty-first annual report of the General Board of Control for Scotland gives considerable space to the question of boarded-out patients. During last year 1249 pauper patients were thus cared for. The majority of these patients are defectives, and tribute is paid to the coöperation between the local medical officer, the public assistance officer, and the Board which enables the best conditions for the patient to be obtained. Numbers of patients are cared for on the outlying crofts, and guardianship has become in some cases almost a matter of heredity, the present guardians having been in contact with patients from their earliest days. In such instances the present guardians carry on a tradition of tolerance, patience, and skill which their grandparents first learnt. Very little objection is taken to the close mixing of normal children with defective adults, a mixing which in itself seems to arouse a sense of responsibility in the children. Licence has proved useful. The general consensus of opinion favours a short period of institutional care, but several examples are given of the process whereby children are transferred to guardianship after lengthy preparation of the parents for the step. The fact that the patient does in suitable instances return home from time to time undoubtedly helps. The defectives who do best are those who have had the advantage of training in special schools or at welfare centres before being boarded-out. The Commissioners stress the necessity of more accommodation of an institutional kind. A State institution is required for the specially difficult defective. Ascertainment is still far from perfect. The higher grade defective is not sufficiently marked out from the normal child at school. He goes out into the world, and only later comes under the notice of the authorities. In view of the considerable use made of guardianship in Scotland these cases might do well after they had been transferred to special schools. It is noted that two Commissioners of the English Board of Control have visited some of the boarded-out cases and were impressed by "the intelligence, culture, simplicity, and kindness" of the Scottish guardians. Surely such virtues are not peculiar to Northern Britain, but certain factors seem to work against a further extension of the practice. The high-grade defectives are an asset to mental hospitals in terms of work given; they help to bring down the cost per head. Boarding-out is a hazard. Many may feel that residence under hospital conditions is to be preferred. But when the strain placed upon hospital accommodation by serious psychotic cases is considered, and the durable results of the system in Scotland are remembered, it would seem that boarding-out is likely to prove a developing mode of treatment. Though little mention is made of the boarding-out of cases of chronic mental illness it is generally agreed that this mode of dealing with certain patients could be expanded. It is not only a matter of beds and accommodation. Nor is it only a case of giving more opportunities for guardianship to suitable people. Boarding-out is one of the main ways in which the public can recognise the common incidence of mental disorder and learn to overcome the repulsion which cuts across the progress of psychiatry and the humane treatment of the mentally afflicted.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 13TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2430; diphtheria, 1211; enteric fever, 25; acute pneumonia (primary or influenzal), 1429; puerperal fever, 53; puerperal pyrexia, 134; cerebro-spinal fever, 23; acute poliomyelitis, 3; encephalitis lethargica, 6; dysentery, 22; ophthalmia neonatorum, 92. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 20th was 3590, which included: Scarlet fever, 1107; diphtheria, 1540; measles, 22; whooping-[illegible] ›ver, 18 mothers (plus 5 babies); [illegible]; poliomyelitis, 2. At St. Margaret's [illegible] ies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 20 (0) from measles, 8 (2) from scarlet fever, 28 (6) from whooping-cough, 45 (5) from diphtheria, 43 (9) from diarrhœa and enteritis under two years, and 180 (24) from influenza. The figures in parentheses are those for London itself.

The number of influenzal deaths still remains almost stationary, the reported deaths for the last few weeks (working backwards) being 180, 184, 181, 175, 145, 139, 83. This week these deaths were reported from 62 great towns, Manchester reporting 22, Blackburn 10, Portsmouth and Leeds each 7, Birmingham 6, Liverpool, Newcastle-on-Tyne, and Sheffield each 5, Bradford, Stoke-on-Trent, and Norwich each 4. (During the same week Glasgow reported 8 deaths, Edinburgh 7.) Edmonton and Enfield each had 1 death from enteric fever. Four deaths from measles occurred at Cardiff. Leeds, Liverpool, and Sheffield each reported 3 deaths from diphtheria, no other large town more than 2.

The number of stillbirths notified during the week was 251 (corresponding to a rate of 37 per 1000 total births), including 33 in London.

ROYAL WEST SUSSEX HOSPITAL.—At the annual meeting of the governors on April 11th Sir Osmond Brock, chairman of the finance committee, said that this hospital was trying to arrange with all the others in the district for a general appeal for a reduction in their rating assessment. The Bishop of Chichester, who presided, referred to the disappointing reply of the county council to a request for a grant of £6400 towards the provision of a maternity home. The area served by the hospital had seen steady building development and it was difficult to feel that the hospital should be expected, without assistance, to meet the needs of a population much larger than the one for which it was provided.

CORRESPONDENCE

SALT LOSS AS A COMMON CAUSE OF ILL-HEALTH IN HOT CLIMATES

To the Editor of THE LANCET

SIR,—In 1923 Moss[1] drew attention to the fact that miners, working at high temperatures and sweating profusely, often suffered from muscular cramps as a result of slaking their thirst with water. These cramps did not occur if they quenched their thirst with dilute solutions of saline fluid. This condition is also now known to occur in stokers working in ships under similar conditions of temperature.

I believe that loss of sodium chloride in the sweat is a frequent and often unrecognised cause of ill-health and loss of efficiency in the white inhabitants of tropical and sub-tropical countries during the hot seasons, owing to their continuous exposure to high temperatures, although conditions are less strenuous as regards exertion. During the months of May, June, and early July the average maximum daily shade temperature in the Punjab is in the neighbourhood of 110° F., the minimum rarely falling below 85° F.

Hunt[2] estimated the loss of fluid under unfavourable conditions during the hot weather in India at 30 pints per diem. As a result of 13 years' residence in the Punjab and North-West Frontier Province, I have come to the conclusion that the average amount lost by sweating during the hotter months of the year is in the neighbourhood of 12 pints under moderately favourable conditions and with light exercise, although very much larger amounts may be lost under conditions involving great exertion with exposure to sun. The proportion of sodium chloride—the main constituent of sweat—is estimated by some writers as high as 0·95 per cent., but Yas Kuno,[3] taking an average, estimates it at 0·3 per cent. Even admitting this low figure, the loss of sodium chloride from 12 pints of sweat would be some 16 grammes a day. In addition, the amount of chloride passed per diem in the urine of normal individuals is about 12 g.[4] The amount of chloride necessary for bodily metabolism is variously estimated by different writers, but the lowest estimate appears to be 4 g. per diem,[5] making a total requirement of 32 g. under the conditions normally found in the hot weather in warm climates. The amount of chloride taken in food and cooking probably does not usually exceed 15–20 g.[6] and is often much less, making a deficit of some 12–17 g. daily. Under unfavourable conditions of exposure and exertion or reduced salt intake it might amount to more than double this quantity.

The indigenous inhabitants of hot climates consider salt an extremely important article of diet and consume large quantities of it, whereas the white people merely regard it as a flavouring agent. It is no exaggeration to say that many Europeans, residing in the East, dread the onset of the really hot weather, because they never feel well while it continues. The least pronounced symptom complained of is [illegible] undue fatigue after moderate exertion, [illegible] common complaints in otherwise healthy people are apparently causeless lassitude, headache, [illegible] and inability to concentrate. I further believe that excessive sweating—in itself an unpleasant symptom of salt deficiency—may be followed as a major manifestation by heat prostration or exhaustion, and as a minor by prickly heat or muscular cramps.

During the last three hot weathers spent in the Punjab, by greatly increasing the intake of sodium chloride, I have very much diminished the [illegible] of the above disabilities in others and in myself. [illegible] usual method recommended of increasing [illegible] is to drink physiological saline solution [illegible] full strength (0·95 per cent.) or in various [illegible] down to quarter strength. The [illegible] are very unpleasant to many people [illegible] intelligent coöperation of the cook [illegible] to increase the amount of salt [illegible] may also be added at table, particularly [illegible] and gravy. The breakfast cereal [illegible] quantities of milk are consumed [illegible] able additional medium by which [illegible] may be increased.

I am confident that many [illegible] weather almost unbearable [illegible] so were greatly increased [illegible] to their daily diet. By [illegible] would largely prevent [illegible] disorders.—I am, Sir, yours [illegible]

London, April 23rd.

THE EFFECT OF [illegible] LACTIC ACID BA[illegible] IS[illegible]

To the Editor [illegible]

SIR,—In [illegible] conducted by the [illegible] relative value [illegible] be helpful [illegible] urgently [illegible]

(1) The [illegible] bacteria—[illegible] natural [illegible]

(2) [illegible] by [illegible]

(3) [illegible]

[illegible] E. coli, bacteria which [illegible] in infants. These bacteria, [illegible] [illegible] and lose their [illegible] —e.g., they lose their Gram-[illegible] culture medium such as is found [illegible] alimentary canal of an infant.

The lactic acid bacteria, [illegible] the growth and multiplication [illegible]

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[4] Hutchison, R., and Hunter, D.: Clinical Methods, [illegible] ed., London, 1935.

[5] Carter, Howe, and Mason: Nutrition and Clinical Dietetics, Philadelphia, 1923.

[6] Hutchison, R., and Mottram, V. H.: Food and the Principles of Dietetics, 7th ed., London, 1933.

[1] On Acute Intestinal T[illegible]

should these gain access to milk. Pasteurisation thus robs the milk of the lactic bacteria—the all-important agents for the production of the necessary acid medium for the prevention of the growth of pathogenic micro-organisms. Hence, in investigations on the relative values of raw and pasteurised milk, it is essential carefully to consider the part played by the lactic bacteria in raw milk in the prevention of diseases caused by pathogenic micro-organisms; moreover, it is necessary to determine what practical risks are likely to ensue from the consumption of pasteurised milk in which the natural antiseptic agents —the lactic bacteria—have been destroyed.

(4) To what extent is the oxygen present in raw milk diminished by pasteurisation ? and what effect on general health, and, especially, the resistance against pathogenic micro-organisms, is likely to ensue from the consumption of pasteurised milk containing less oxygen than raw milk ?

Fresh unheated milk contains a considerable amount of oxygen, whereas stale milk and heated milk contain much less or none. Milk rich in oxygen has been found to have an important beneficial action on digestion; also it has been found by G. Arbour Stephens[2] beneficial in cases of anæmia, debility and insomnia. Since milk rich in oxygen has such a good effect on the blood in cases of anæmia, it is highly probable that fresh unheated milk of known good quality, and containing considerable oxygen, will be found to be a much more efficient agent than pasteurised milk deficient in oxygen for providing natural immunity against diseases in man and in animals.

This is one of the important points on which carefully planned researches are needed to obtain reliable information. As Sir Frederick Keeble,[3] Sir Arnold Wilson, Lord Iveagh and others have urged, it is only by thorough investigations on the many factors involved in the milk problem that we shall be able to gain practical and reliable knowledge about the relative values of raw and pasteurised milk.

I am, Sir, yours faithfully,

WALTER FEARIS,

Formerly Bacteriologist to the City of Cardiff and County of Glamorgan Public Health Laboratory.

Brightlingsea, April 17th.

SO-CALLED ACIDOSIS ATTACKS

To the Editor of THE LANCET

SIR,—I am glad that Dr. Paterson has brought into notice what he terms " so-called acidosis attacks." Though I could never claim that hardly a day passes when I did not see a case, working as I did with Dr. W. B. Cheadle and living for many years in touch with sick children, I have naturally seen many examples of the " old-fashioned " cyclical vomiting. Long before the days of the distinguished names mentioned in Dr. Paterson's paper the condition was thoroughly recognised, and I do not believe that those who had practical dealings with these cases ever seriously accepted acidosis as more than a fashionable label, representing a phase of scientific medical knowledge, recognising that such is usually more or less correct and usually perhaps the latter.

Cyclical vomiting was not a bad term. I have seen cases in which almost to the day attacks occurred every 4 or 3 or 6 weeks, and it is hardly to be supposed that an infection broke out at these regular intervals. On the contrary, observation and the results of treatment pointed to a gradual accumulation of what very old-fashioned doctors called "peccant matter" in the system. I have repeatedly seen those cyclical intervals gradually lengthen and finally disappear under medical treatment not directed to infection. The liver also has been long considered one factor at least in causation. In such cases the diet was controlled by the diminution—not the withdrawal—of fats and particularly of hot fats; some days before the suspected outbreak calomel or grey powder was given, the diet reduced, plenty of water advised, and magnesia, bicarbonate of soda with some rhubarb or bromide prescribed, and the attack averted or postponed. For me there is no better proof of the value of medical treatment than improvement in the health of the patient, and rightly or wrongly I have always thought this to be one of the objects of studying medicine.

Again I think whatever the theoretical views upon a medical problem may be, direct personal experience of improvement from a particular line of treatment is of value, though there are naturally the dangers of personal bias or obstinacy. It has long been common knowledge that these children are "highly strung," and I have seen a number of doctors' children who have been great sufferers from cyclical vomiting. The connexion between disturbances of the liver and of the nervous system is a most interesting one quite apart from infection, and cyclical vomiting during the intervals between attacks requires careful attention as the ancients well understood. It has always appeared to me that there is a relation between cyclical vomiting and the much more uncommon condition acholuric jaundice, but I know I shall be at once crushed by the sentence " increased fragility of the red cells."

I agree that infection is of importance in all hepatic disorders, but the object of this letter is to express my belief that many cases of so-called acidosis are not primarily due to infection, but to some metabolic disorder. I entirely support the desire for accurate diagnosis which has perhaps been made more difficult by abolishing the harmless imperfect term " cyclical" and the confusion caused by the term " acidosis."

I am, Sir, yours faithfully,

London, April 20th. F. JOHN POYNTON.

THE BIRTH OF APES

To the Editor of THE LANCET

SIR,—In a most interesting and illuminating paper read recently before the Royal Society of Medicine (see THE LANCET, March 23rd, p. 678) Mr. James Wyatt described the birth of a chimpanzee at the London Zoological Gardens. He inferred that it was born occiput first as in human birth, but the last stages were very rapid and this point may have been overlooked. As far as I have been able to ascertain the occipital method of birth would seem to be peculiar to man. If one looks at the shape of the skull in ape or monkey there is no occiput to speak of —they are born snout first like all animals, horses, cattle, dogs, rabbits, guinea-pigs whose forepaws are under the chin. I thought so when I was comparing the shape of skulls with shape of female pelvic brims at the Royal College of Surgeons some years ago (1929). I then made inquiries in India, where the monkey is sacred. An Indian doctor, who holds a chair at the Lahore Medical College, said to me, " Undoubtedly your view is right, the monkey *is* born face first." Prof. J. Jarcho, in his recent book on posture and practices during labour among primitive peoples, reproduces Hartman and Tinklepaugh's photographs of *Macacus rhesus* in labour taken at Baltimore (1929). Of 11 cases they photographed 6; in 3 cases where they mention presentation it was the face that emerged first.

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[2] Heart and Spleen in Health and Disease, London, 1932.

[3] Milk Supplies in Relation to National Health, Nature, June 2nd, 1934, p. 809.

I suggest that it is the fact of occipital birth being peculiar to man that has invested that part of the human head with religious associations. All Eastern people regard the occiput of man as specially sacred. Among Hindus one lock of hair is carefully preserved in that region. After death, on the funeral pyre, that part of the head is broken to set the spirit free. Mohammedans always cover that part of the head, however small the cap, and in pictures of saints and angels, both Christian and Buddhist, we see the holy man depicted as having a circle of light round the sub-occipito bregmatic circumference of his skull. I therefore call it the halo measure for short. In the West we have the monk's tonsure, and the acolyte's cap just covering the occiput. In the maternity hospital Calvados, Normandy, where there were weekly baptisms, the infants were held in their swaddling clothes, face downwards over the font, and baptised on the occiput.

This distinction between the birth of man and the birth of the ape seems to me a fact worthy of more attention than it has yet received. In all animals the female pelvis is rounder than in the male. The pelvic brim is always the shape of the part of the animal to be born through it. Only civilised man violates this law.

I am, Sir, yours faithfully,

London, April 15th. KATHLEEN VAUGHAN.

ANÆSTHESIA FOR PAINFUL DRESSINGS

To the Editor of THE LANCET

SIR,—I recently spoke to a patient who had undergone an operation for excision of the rectum and she made mention of the severe pain she endured during post-operative dressings. It is apparent that many hospitals do not yet know of the value of Dr. R. J. Minnitt's gas-and-air technique for relieving the pain of this type of dressing. At the Wellhouse Hospital, Barnet, at the request of the late Lord Knutsford, we have carefully tested the value of the gas-and-air analgesia for use in the general surgical wards. We have found that for all types of painful dressings in both adults and children Dr. Minnitt's method gives excellent results. I feel that this should be more generally known as much suffering could be avoided.

I am, Sir, yours faithfully,

New Barnet, Herts, April 16th. JOHN ELAM.

HUGHLINGS JACKSON'S GENIUS

To the Editor of THE LANCET

SIR,—Most of the recently revived reminiscences of Hughlings Jackson have alluded to his great kindliness, generosity, modesty, wit and humour, enthusiasm for the truth, and those many other qualities which gave him the stamp of a perfect English gentleman; but, although we all recognise his outstanding genius, the recent centenary celebrations have not apparently stimulated the recital of any samples of that mastery of inductive logic which was so peculiarly his own. I feel therefore impelled to relate the following anecdote.

One day in his carriage with him, as we house physicians so often were, he told me of his observation that the knee-jerks were absent in lobar pneumonia. Then—after a pause: "You know, Stoddart, I think that the rabbit can have no lateral horns in its spinal cord." I looked interested but, knowing the old man so well, made no comment. He said: "In pneumonia there is an acceleration of respiration disproportionate to the pulse-rate—and rabbits are immune from pneumonia." I must confess that I felt sceptical; but Jackson asked W. S. Colman, then pathologist to the National Hospital, to cut sections of the spinal cord of a rabbit and, sure enough, the rabbit has no lateral horns. I wish Colman were still with us to tell the story. My point is that anybody can make such an observation by cutting sections and looking; nobody but Jackson could arrive at such a conclusion by discovering that the knee-jerks are absent in pneumonia.

I am, Sir, yours faithfully,

W. H. B. STODDART.

Cavendish-square, W., April 23rd.

A "CAUSE" OF EPILEPSY

To the Editor of THE LANCET

SIR,—In an annotation last week (p. 947) sulphur is mentioned as a new cause of epilepsy. The source of the sulphur was a hair lotion. Practical experience taught me, many years ago, that "hair restorer" and "sulphur hair lotion" might be innocent-looking names for lead hair dye. The essential ingredient, in at least one instance, was acetate of lead. That substance was not referred to, stress being laid upon the refined milk of sulphur. Lead encephalopathy is a rare and sometimes very puzzling condition. Epileptiform convulsions are common in diachylon poisoning . . . headache and vertigo are common in lead encephalopathy (Price: "Text-book of Medicine," 1930, p. 375). Then, among the exciting causes of epilepsy is acute intoxication by lead (Ibid., p. 1528). Typical epileptic convulsions in a severe case of lead encephalopathy, although puzzling at first, helped me considerably in the diagnosis.

A chemical analysis of the sulphur hair lotion would be useful.

I am, Sir, yours faithfully,

ALLAN EDWARD MAHOOD.

Haynford, Norfolk, April 21st.

PROGNOSIS IN PULMONARY TUBERCULOSIS

To the Editor of THE LANCET

SIR,—I should like to endorse what Dr. Vere Pearson, Dr. Warwick Preston, and Sir Pendrill Varrier-Jones have to say about the kind of occupation to which patients should return on completion of sanatorium treatment. Unfortunately the advice given them by well-meaning persons, including at times tuberculosis workers, is not always the best. Patients are frequently advised to seek work in the open air, often arduous and exposed to all weathers, rather than remain in an office or workshop. Open-air work is considered by many people to be of vital importance to the tuberculous person, whereas an occupation that is free from worry and provides a good wage is far more valuable. I expressed these views 25 years and more ago when I was in sanatorium practice, and repeated them in a report to the L.C.C. on the Employment of Tuberculous Patients (P. S. King and Son, 1928). One sentence in this report runs:

> "It cannot be too strongly emphasised that, with few exceptions, the best occupation for a tuberculous person is the one to which he is accustomed and at which he can earn a good income, provided it can be carried out under reasonably hygienic conditions."

American experts estimate that in their country 50 per cent. of all workers treated for tuberculosis

MEDICAL NEWS

Scottish Conjoint Board

As a result of recent examinations of the conjoint examining board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates have been granted the diplomas of L.R.C.P. Edin., L.R.C.S. Edin., L.R.F.P. and S. Glasg. :—

K. R. Minto, H. A. Korn, H. S. Berent, Max Schmuschkowitz, G. G. Macrae, H. A. J. P. Strecker, L. J. W. Wurzburger, A. E. Martin, Hans Abrahamsohn, Kurt Strauss, R. K. A. van Someren, G. D. W. Adamson, Fritz Abrahamsohn, Anneliese Schloss, Alexander Buchan, H. D. B. North, Norbert Anderman, Balbina Lurje, Hugo Droller, T. A. B. Mason, G. P. A. A. Nayagam, Alexander Watt, Hartwig Buxbaum, Kurt Silverstein, William O'Callaghan, Alfred Model, Walter Misch, P. T. Weyl, C. V. De Biaso, Bruno Lux, Ernst Goldschmidt, Erwin Flatow, A. M. Geissa, Florizel Westbourne-Aird, E. St. M. Brett, J. C. MacDougall, H. A. Magnus, W. H. Jervis, Mohamed Ismail, Siegfried Simon, and Arthur Philipp.

University of Glasgow

On April 20th the following degrees were conferred :—

M.D.—W. R. Snodgrass (with honours); David Clyde (with high commendation); W. A. Murray, M. M. Scott, William Tennent, and J. A. Waterman (with commendation); John Leishman, E. W. McCormick, Jean M. Mackintosh, A. W. McRorie, C. D. F. Morton, and F. R. Wilson.

M.B. Ch.B.—A. M. Pugh, Theodore Crawford, and R. G. Henderson (with honours); D. H. Wallace, J. A. C. Knox, and J. B. Brown (with commendation); R. G. Anderson, S. Y. Baird, B. N. P. Bannatyne, R. S. Barclay, P. McI. Bennett, A. C. Blair, W. M. Boyd, Donald Campbell, Elizabeth N. Christie, D. S. Crawford, W. F. Cruickshank, I. McN. Drysdale, J. W. Eidlin, A. W. V. Eley, A. D. Fleming, Maev Gallagher, Mima M. Gemmell, W. R. Gemmell, H. B. Gillespie, Abraham Glasser, Julius Gordon, J. F. Harper, Phebe N. Harvey, Wolff Hirshow, Allen Iredale, A. C. Jacobsen, D. T. Kemp, A. S. Kitchin, P. H. C. Kodilinye. J. H. Levack, Louis Levine, Isidor Livingstone. James McAulay, John McCreadie, R. MacG. McGowan, A. F. McIntyre. J. P. McIntyre, G. N. MacKenzie, A. C. Mayer, K. R. Minto, N. R. Murdoch, A. M. Murray, Hugh Richmond, M. S. Robertson, William Sharpe, J. A. Sinclair, Solomon Slonimsky, J. A. Squair, Ralph Steinacre, Sarah Stewart, George Struthers, J. H. Taylor, Andrew Tracy, James Travers, E. H. Wallace, Jeanie F. Watson, I. B. L. Weir, David Wolfson, David Wright, and James Wyper.

Royal College of Surgeons of England

The lecture which was to have been given by Dr. W. B. Coley at the college on Wednesday, May 1st, has been postponed.

University of London

The Geoffrey Duveen travelling studentship in oto-rhino-laryngology will shortly be available and application is invited from graduates of the University. Particulars will be found in our advertisement columns.

University of Birmingham

The Walter Myers travelling studentship of the value of £300 is available for the year 1935–36, and is tenable at an approved university or hospital not in Great Britain or Ireland. Candidates must be under thirty years of age, and unless graduates of Birmingham must have worked at the Birmingham medical school for three years immediately preceding their application. Further information may be had from the dean of the medical faculty, The University, Edmund-street, Birmingham, 3.

University of Edinburgh

A lectureship in memory of the late Sir Edward Sharpey-Schafer has been founded, and will be administered by the University. Sir Charles Sherrington, F.R.S., has agreed to give the first lecture.

The sum of £15,000 has been given to the University by Mrs. Stewart Hall for the endowment of a lectureship in the pathology of the diseases of children.

Queen's University Club, London

The annual spring dinner of this club will be held at 7.30 for 8 P.M. on Thursday, May 2nd, at the Dorchester Hotel, Park-lane, London, W., with Dr. Thomas Carnwath, the president, in the chair. The hon. secretaries are Mr. R. Lindsay Rea and Mr. R. L. Dodds.

Royal Institution of Great Britain

On Friday, May 10th, Dr. C. S. Myers, F.R.S., principal of the National Institute of Industrial Psychology, will discuss the scientific approach to vocational guidance, and a demonstration of method as applied to an individual case will be given by Dr. Angus Macrae.

THE death of Sir Richard Rawdon Stawell, reported last week from Melbourne, is a tragic occurrence, for he was the president-elect of the British Medical Association and would have presided over the annual meeting to be held in Melbourne in September next.

Dr. John Innes Moir has been appointed a member of the Executive Council of the Colony of British Honduras. It was announced in THE LANCET recently that Dr. Moir has been appointed principal medical officer to the colony.

Demonstrations of Contraceptive Technique

On Thursday, May 2nd, at 2.30 P.M., a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher. Application for tickets (which will be supplied to medical practitioners and senior students only) should be made in writing to the hon. secretary, the Society for Constructive Birth Control, 108, Whitfield-street, London, W.1.

Indian Medical Service

The annual dinner will be held at the Trocadero Restaurant, London, on Wednesday, June 19th, at 7.15 P.M., when Major-General E. A. Walker, C.B., K.H.S., director of medical services in India, will preside. Officers can arrange to sit near their friends, as separate tables to seat eight will be provided. Tickets from the joint hon. secretary, Sir Thomas Carey Evans, Hammersmith Hospital, Ducane-road, London, W.12.

Institute of Child Psychology

A course of eight lectures on aspects of normal child life will be given at Friends House, Euston-road, London, N.W., on Wednesdays from June 5th to 26th. On each day there will be lectures at 6.15 and at 8.15 P.M. On the first day Dr. Margaret Lowenfeld will speak on play in childhood, and Dr. Hazel Chodak Gregory on the place of habit in development. During the course Dr. Lowenfeld will also lecture on play phantasy and experience; child's play and man's work; and comedy and tragedy in play. Other lecturers will include Dr. Alan Moncrieff (the effect of illness upon temperament) and Dr. Ethel Dukes (phases of development). Applications for tickets should be made to the lecture secretary of the Institute, 26, Warwick-avenue, W.9.

Two Deaths after HCN Fumigation

At an inquest held at Aldershot last week the coroner went very carefully into the circumstances attending the death of two children in a house which had been fumigated more than 24 hours previously with hydrocyanic acid gas. The fumigation of a group of four brick cottages was carried out on the Thursday by an experienced operator, who opened every door, window, and cupboard at 9.30 P.M., when he had finished, and he did not leave the house until 11.30 P.M., after testing the atmosphere and the bedding. There might, he said, have been some trace of gas in the house when he left, but he was satisfied there was no danger. On the following (Friday) morning, after the sanitary inspector had seen that all the doors and windows were wide open, the family was allowed to return. Four of the five occupants of the house were taken ill during the Friday night, when a girl of five was found dead in bed by her sister; the parents and a small boy were removed to hospital and recovered. Only one occupant of the house, an older boy, was unaffected. In an adjoining cottage a girl of 12 months was found unconscious, and died later. Dr. E. T. Ruston, who made the post-mortem examination, said that the baby girl had an excessive amount of lymphoid tissue which would make her more susceptible to cyanide poisoning. The jury returned a verdict of death from misadventure, adding a rider that "in future, owing to the extremely dangerous nature of the gas, more competent supervision should be given by those responsible, and also two men should be employed, and the final certificate for re-entry into the house fumigated should be given by the medical officer of health."

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

The following officers qualified at the examination for the rank of surgeon commander held recently: Surg. Lt.-Comdrs. A. A. Pomfret, E. C. Davies, R. G. Anthony, E. J. K. Weeks, C. Keating, E. B. Pollard, J. C. Souter, J. Cussen, and D. C. Drake. Surg. Lt.-Comdrs. Pomfret, Pollard, and Souter qualified for accelerated promotion.

Surg. Comdr. (D.) J. R. Palmer placed on the Retd. List at own request, with rank of Surg. Capt. (D.).

Surg. Lt.-Comdr. (D.) A. Lawrey, O.B.E., is promoted to rank of Surg. Comdr. (D.), and Surg. Lt. H. L. Belcher to rank of Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. W. G. MacLean to *Valiant*.

Proby. Surg. Sub-Lts. P. S. Luffman to *Drake* for R.N. Hosp., Plymouth, and P. de Bec Turtle to *Valiant*.

ROYAL AIR FORCE

Flying Offrs. R. G. James and J. W. Patrick, both to R.A.F. Depôt, Uxbridge.

The following short-service and non-permanent officers have been notified that they become due on the dates stated for transfer to the Reserve on completing their period of service on the active list:—

Dental Branch.—Flight Lts. S. C. Allen (Oct. 13th); F. F. Kennedy (Oct. 15th); and C. R. Stone (Oct. 31st). The officers have been asked whether they desire to be considered for an extension of service to ten years on the active list (five years for Flight Lt. Stone).

Permanent Commissions.—The Air Council have decided on the procedure to be adopted in connexion with the appointment of officers to permanent commissions in the medical branch. Under the revised constitution of this branch, published last May, all officers are entered in the first instance for short service.

The grant of permanent commissions will be by selection, an average of six vacancies being offered each year. Selections will be made twice yearly, in May and November, and the normal zone for consideration will be during an officer's second year of service. In this way the qualifications of each officer will be balanced against those of his contemporaries so as to secure a strictly equitable consideration of the merits of all competitors.

After consultation with their principal medical officers A.Os.C. will furnish to the Air Ministry by May 15th and Nov. 15th each year a report on all eligible medical officers holding short-service commissions, stating in each case whether or not the officers are recommended as suitable for selection. Recommendations are to be arranged in order of merit. Although the normal zone will be between one and two years, reports will continue to be rendered until the officers have completed the three years' active list period of their commissions.

DEATHS IN THE SERVICES

The death occurred on Easter Sunday, April 21st, of Major Robert Hemphill, D.S.O., R.A.M.C., medical officer at the Royal Military Academy, Woolwich, who lost his life by falling from a cliff at Kellan Head, Cornwall, while photographing a buzzard's nest. He was the eldest son of the late Canon Hemphill of Belfast. Born in 1888, he was educated at Trinity College, Dublin, graduating in 1912 and at once joining the R.A.M.C. He served in the European war as a temporary lieut.-colonel, was mentioned in dispatches, and was created D.S.O. in 1918. In 1929 he was posted staff surgeon at Cairo. At school and college he was a keen Rugby football player, was in his university team from 1908 until 1912, and in the latter year received international caps for Ireland against England, Scotland, Wales, and France. In 1913 he played for the Army. While in Egypt he represented his corps at lawn tennis, cricket, and golf. He was a member of the R.A.M.C. team that won the Inter-Unit Golf Championship in 1930–31. Major Hemphill married in 1915 Kathleen, daughter of the late Mr. and Mrs. H. Augustus Smith of Bitterne, Hampshire. His wife lost her life in an attempt to rescue her husband after his fall, and their son nearly shared their fate in a gallant attempt at rescue.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, April 30th.

Therapeutics and Pharmacology. 5 P.M. Dr. C. A. Neymann (Chicago): The Treatment of Disease by Means of Electro-pyrexia.

Pathology. 8.30 P.M. Dr. Claus Jensen (Copenhagen): The 1934 Epidemic of Poliomyelitis in Denmark. Other speakers: Dr. G. H. Eagles, Dr. H. S. Banks, Dr. E. W. N. Hobhouse, and Dr. J. D. Rolleston.

Wednesday, May 1st.

History of Medicine. 5 P.M. Annual General Meeting. Dr. A. P. Cawadias: The Medical Art of Maimonides and its Influence in the Development of Medicine. Dr. W. M. Feldman: Maimonides: His Life and Work.

Surgery. 5.30 P.M. Annual General Meeting.

Thursday.

Tropical Diseases and Parasitology. 8.15 P.M. Annual General Meeting. Colonel A. E. Hamerton: Spread of Tubercle in Animals in Captivity. Dr. H. H. Scott: Tubercle in Man in the Tropics.

Friday.

Otology. 9.30 A.M. Ann [illegible] Dohlman: Practical a[illegible] thology. Mr. A. R. [illegible] Dr. A. A. Gray: Treatment of Otosclerosis from a New Standpoint.

Laryngology. 5 P.M. Annual General Meeting. Dr. Gavin Livingstone: Chordoma.

Anæsthetics. 8.30 P.M. Annual General Meeting. Dr. C. F. Hadfield: The Joint Anæsthetic Committee. A Retrospect of Eleven Years' Work.

BRITISH PSYCHOLOGICAL SOCIETY.

Wednesday, May 1st.

Medical Section.—8.30 P.M. (36, Gloucester-place, W.) Dr. W. R. Bion: Psychological Asepsis.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Friday, May 3rd.—8.45 P.M. (West London Hospital), Clinical and Pathological Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, April 29th, to Saturday, May 4th.—Maudsley Hospital, Denmark-hill, S.E. Afternoon course in psychological medicine.—St. John's Hospital, Leicester-square, W.C. Afternoon course in dermatology. Open to all.—Royal Waterloo Hospital, Waterloo-road, S.E. All-day course in medicine, surgery, an [illegible] Hospital, Victoria [illegible] e in cardiology.—Courses [illegible] are open only to members and associates.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C.

Thursday, May 2nd.—5 P.M., Dr. W. L. Templeton: The Aromatics of Disease.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Monday, April 29th, to Saturday, May 4th.—Dr. Archibald Durward: Course in Anatomy and Physiology.

ST. MARY'S HOSPITAL, London, W.

Thursday, May 2nd.—5 P.M. (Institute of Pathology and Research), Sir Almroth Wright, F.R.S.: On the Discrimination of the True from the False in Medicine and elsewhere.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

Wednesday, May 1st.—5 P.M., Dr. H. Corsi: Diseases of the Nails.

Thursday.—5 P.M., Dr. S. E. Dore: Demonstrations of Some Rare Skin Diseases.

Friday.—5 P.M., Dr. G. B. Dowling: Skin Diseases due to Protein Sensitisation.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.

Wednesday, May 1st.—3 P.M., Dr. H. Crichton-Miller: Asthma. 4.30 P.M., Dr. Cedric Shaw: The Allergic Diseases: Theories.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

Sunday, April 28th.—10.30 A.M. (Newcastle General Hospital), Prof. T. Beattie: Medical ward visit.

ROYAL INFIRMARY, Manchester.

Tuesday, April 30th.—4.15 P.M., Mr. A. H. Southam: Renal Tuberculosis.

Friday, May 3rd.—4.15 P.M., Dr. P. B. Mumford: Demonstration of Dermatological Cases.

UNIVERSITY OF BIRMINGHAM.

Tuesday, April 30th.—3.30 P.M. (General Hospital), Mr. A. B. Danby: Some Disorders and Abnormalities of Pregnancy and their Treatment.

Wednesday, May 1st.—3.30 P.M. (Anatomy Theatre), Dr. Howard Collier: Dust and Fume Diseases.

Friday.—3.30 P.M. (Queen's Hospital), Dr. A. V. Neale: Demonstration of Medical Cases.

ROYAL INFIRMARY, Dundee.

Thursday, May 2nd.—3.15 P.M., Mr. Moodie and Dr. Scott: Clinical Eye Cases. 4.15 P.M., Dr. F. M. Milne: Arterio-sclerosis and its Treatment.

GLASGOW POST-GRADUATE ASSOCIATION.

Wednesday, May 1st.—4.15 P.M. (Royal Infirmary), Mr. Donald Duff: Surgical Cases.

Appointments

Brinton, D., B.M. Oxon., M.R.C.P. Lond., has been appointed Assistant Physician to the National Hospital, Queen-square, London.

Fickling, B. W., M.R.C.S., L.D.S. R.C.S. Eng., Assistant Dental Surgeon to St. George's Hospital, London.

Fickling, E. L., M.R.C.S., L.D.S. R.C.S. Eng., Dental Surgeon to St. George's Hospital, London.

Harris, B. P., M.B. Camb., Assistant Resident Medical Officer to Queen Charlotte's Maternity Hospital.

Jackson, H., F.R.C.S. Eng., Assistant Surgeon to the National Hospital, Queen-square, London.

Jones, **Evan**, M.B., M.R.C.P. Lond., Resident Medical Officer to the National Hospital for Diseases of the Heart, London.

MacVicar, W., M.D. Manitoba, F.R.C.S. Edin., Medical Officer to the Christie Hospital and Holt Radium Institute, Manchester.

Morgan, B., M.R.C.S. Eng., Assistant Pathologist to the Royal Infirmary, Sunderland.

Nankivell, J. W., M.B. Lond., F.R.C.S. Edin., Hon. Assistant Obstetric Surgeon to the Royal Victoria and West Hants Hospital, Bournemouth.

Nolan, G. **Russell**, M.B. Sydney, D.M.R.E. Camb., Assistant Radiological Officer (locum) to the Christie Hospital and Holt Radium Institute, Manchester.

Osborne, J. W., M.D., B.S., Out-patient Medical Officer to the National Hospital for Diseases of the Heart, London.

Hospital for Consumption, Brompton.—The following appointments are announced:—

Brooks, W. D. W., B.M. Oxon., M.R.C.P. Lond., Medical Registrar;

Lander, F. P. L., M.D., M.R.C.P. Lond., Medical Registrar;

Fitts, C. H., M.D. Melb., M.R.C.P. Lond., Resident Medical Officer;

Gowar, F. J. S., M.B. Lond., F.R.C.S. Eng., Resident Surgical Officer; and

Glick, L., M.B. Leeds, Assistant Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: Dr. L. E. A. B. **Farr** (Andover, Hampshire), and Dr. J. N. M. **Fairley** (Dunblane, Perthshire).

Medical Referee under the Workmen's Compensation Act, 1925: Dr. H. G. **Garland**, of Leeds, an additional Medical Referee for the Dewsbury and Leeds County Court Districts (Circuit No. 14).

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hospital.—H.S. £150.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.

Banbury, Horton General Hospital.—Res. M.O. At rate of £150.

Barnsley, Beckett Hospital and Dispensary.—Res. Surg. O. £300.

Bath, Royal United Hospital.—Out-Patient and Cas. O. At rate of £150.

Bedford County Hospital.—First and Second H.S. At rate of £155 and £150 respectively.

Birmingham, Dudley-road Hospital.—Jun. M.O. At rate of £200.

Birmingham University.—Walter Myers Travelling Studentship. £300.

Bradford Royal Infirmary.—Two H.S.'s. Each at rate of £135.

Bridgend, Glamorgan, County Mental Hospital.—Laboratory Research Asst. £350.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. and H.P. Each £120.

Brighton Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £250.

Bristol General Hospital.—Sen. Res. M.O. £200.

British Medical Association, Tavistock-square, W.C.—Asst. Med. Secy. £800.

Burton-on-Trent, General Infirmary.—Cas. O. and H.P. £150.

Cambridge, Addenbrooke's Hospital.—Two H.P.'s. Each at rate of £130.

Charing Cross Hospital, W.C.—Hon. Anæsthetist.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall.—H.P. At rate of £150.

Coventry and Warwickshire Hospital.—H.S. for Aural and Ophth. Depts. At rate of £125.

Denbigh, North Wales Sanatorium.—Asst. Res. M.O. £200.

Dundee University College.—Chair of Physiology.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. £150.

Eastbourne, Royal Eye Hospital, Pevensey-road.—H.S. £100.

Edinburgh Royal Infirmary.—Superintendent. £800.

Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.

Glasgow Eye Infirmary.—Res. H.S. £100.

Glasgow, Ear, Nose, and Throat Hospital.—At rate of £60.

Harrogate, Royal Bath Hospital.—Res. M.O. At rate of £156.

Holland (Lincs) County.—Two Asst. County M.O.H.'s, &c. £750 and £600 respectively.

Hong Kong University.—Professor of Obstetrics and Gynæcology. £1000–50–£1100.

Hospital for Tropical Diseases, Gordon-street, W.C.—Res. Med. Supt. £400.

Infants Hospital, Vincent-square, Westminster.—Res. M.O. At rate of £200.

Institute of Child Psychology, 26, Warwick-avenue, W.—Asst. Physician to Psychological Dept. Also Physician to Parents' Dept.

Inverness District Mental Hospital.—Asst. M.O. £400.

Kinross-shire Ochill Hills Sanatorium, Milnathort.—Asst. M.O. At rate of £150.

Lambeth Hospital, Brook-street, S.E.—Pathologist at Group Laboratory. £1100–£50–£1300.

Lancaster County Mental Hospital.—Asst. M.O. £500.

Leicester Royal Infirmary.—Refraction Asst. for Ophth. Dept. 1 gn. a clinic.

Lincoln County Hospital.—H.S. At rate of £150.

Liverpool, Broadgreen Sanatorium.—Res. Asst. M.O. £200.

Liverpool, Mill-road Infirmary.—Part-time Visiting Surgeon. At rate of £300.

London University.—Geoffrey Duveen Travelling Studentship. £450.

Manchester Ear Hospital, Grosvenor-square, All Saints.—Non-Res. H.S. At rate of £150.

Manchester Royal Infirmary.—Sen. Asst. M.O. for Radiological Dept. £400.

Manchester, Victoria University.—Sir Henry Royce Research Fellowship. £500.

Manor House Hospital, Golders Green, N.W.—Jun. M.O. £200.

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.

Market Drayton, Cheshire Joint Sanatorium.—Clin. Asst.

Middlesbrough, North Riding Infirmary.—Third H.S. £125.

Middlesex County Council.—Dist. M.O. £200. Also Public Vaccinator.

National Hospital, Queen-square, W.C.—H.S. £150.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Registrar. £200.

Newark General Hospital.—Res. H.S. £175.

Newcastle-upon-Tyne Eye Hospital.—Jun. Res. H.S. £100.

Newport, Mon., Royal Gwent Hospital.—Sen. Res. O. £350–£400.

Norwich, Norfolk and Norwich Hospital.—H.S. £120.

Nottingham and Midland Eye Infirmary.—Res. H.S. £200.

Oldham, Boundary Park Municipal Hospital.—Res Asst. M.O. At rate of £200.

Radium Institute, Riding House-street, W.—H.S. At rate of £150.

St. Bartholomew's Hospital, E.C.—Asst. Physician-Accoucheur.

St. John's Hospital, Lewisham, S.E.—Res. Cas. O. At rate of £100.

Sheffield Royal Infirmary.—H.P. At rate of £80.

Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £150.

Southampton, Royal South Hants and Southampton Hospital.—Cas. O., Res. Anæsthetist, and H.S. Also H.S. Each at rate of £150.

Stockport Infirmary.—H.P. £150.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Cas. H.S. At rate of £150.

[illegible] *Hospital.*—Res Asst. M.O. £200.

[illegible]—Res. M.O. £250. Also H.S. £120.

[illegible]—Asst. M.O. £350.

Swansea County Borough.—Asst. M.O. £500.

Swansea General and Eye Hospital.—H.S. At rate of £150.

Tunbridge Wells, New Kent and Sussex Hospital.—Second H.S. £150.

Truro, Royal Cornwall Infirmary.—H.S. £170.

Warrington, County Mental Hospital, Winwick.—Asst. M.O. £500.

Warwick, King Edward VII Memorial Sanatorium, Hertford Hill. Jun Asst. M.O. At rate of £200.

West London Hospital, Hammersmith-road, W.—Res. Anæsthetist. At rate of £100.

Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.

Worksop, Victoria Hospital.—Two Residents. At rate of £150 and £120 respectively.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Ellon, Aberdeenshire; Aberlour, Banffshire; Bewdley, Worcestershire; Brentwood, Essex; St. Clears, Carmarthenshire; Anstey, Leicestershire; Towcester, Northamptonshire; and Blairgowrie, Perthshire.

Births, Marriages, and Deaths

BIRTHS

Denning.—On April 17th, at Clifton, the wife of Lieut. Gordon Denning, M.R.C.S. Eng., R.A.M.C., of a son.

Gibbens.—On April 17th, the wife of Gerald Gibbens, M.B. Lond., of Sidmouth, Devon, of a son.

Giles.—On April 17th, at Colwall, Malvern, the wife of O. Pemberton Giles, M.B. Birm., of a daughter.

Gooding.—On April 18th, 1935, at "Dhoonglen," Ditton-road, Surbiton, Surrey, to Margaret (née Protheroe), wife of Stanley Gooding, M.D.—a daughter.

DEATHS

Bassano.—On April 21st, at Lindfield, Sussex, Thomas Matthias Bassano, M.B. Edin., late of Colchester, Essex, in his 68th year.

Black.—On April 13th, at Rotherfield, Sussex, James Black, M.B. Camb., F.R.C.S. Eng., late Lecturer on Anatomy, Westminster Hospital, aged 82.

Gay.—On April 20th, John Gay, M.D. Durh., D.P.H. Eng., of Upper Richmond-road, S.W.

Hemphill.—On April 21st, accidentally killed, with his wife, at Trebetherick, Cornwall, Major Robert Hemphill, D.S.O., M.B. Dub., R.A.M.C.

Norman.—On April 14th, at Oakham, Alfred Blake Norman, M.R.C.S. Eng., L.R.C.P. Edin., aged 85.

Troup.—On April 14th, at Southport, James Troup, M.B. Aberd., late of Whitefield, in his 69th year.

Utley.—On April 1st, at Suva, Fiji, B. Temple Utley, M.R.C.S. Eng., aged 39.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A POCKET INSULIN CASE

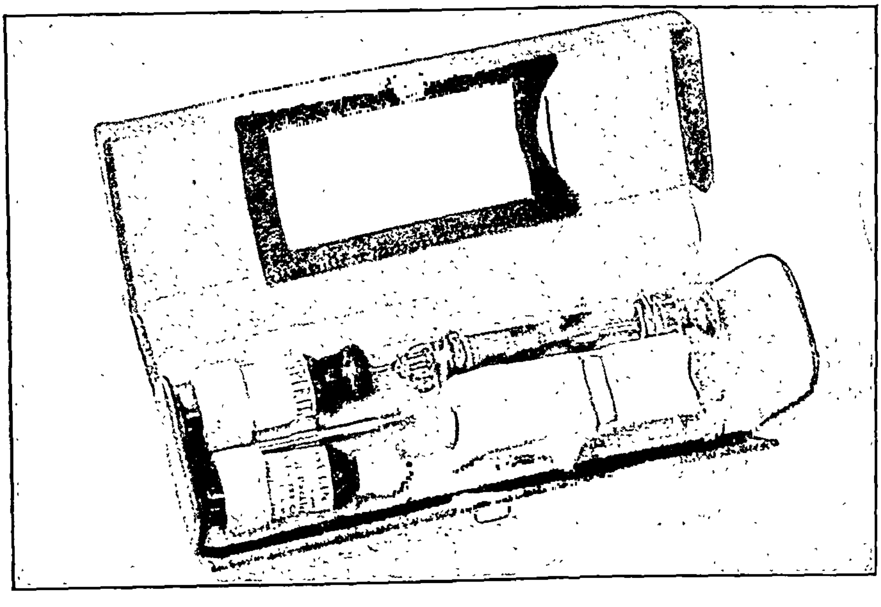
WE have received from Dr. E. E. Claxton, of Folkestone, the following description of a case which he has designed to contain all the requirements for insulin injections. It is to be carried in the pocket or handbag and is always ready for immediate use. The syringe is held by a clip, and the point of the needle is protected by and held inside a rubber-capped spirit bottle. Bottles containing spirit and insulin are mounted in flexible loops and allow access without removal from the case. There is also a pocket for cotton-wool and a clip for a spare needle. Provision is made for a tablet of glucose or a lump of sugar.

The case, which is of leather, is light and handy and made for hard wear. The inside, being lined by waterproof material, is sterilisable by wiping with a swab of cotton-wool soaked in spirit. The spirit bottle can be refilled by the owner either by removing its rubber cap and replacing it or by filling the syringe with spirit and squirting it into the bottle through the rubber cap. When the cap becomes worn and punctured the bottle can be exchanged for an old insulin bottle which answers the purpose satisfactorily.

Method of use.—Spirit is drawn into the syringe without removing the latter from the case. Having done this, the syringe is removed and spirit squirted on to a small piece of cotton-wool which is used for sterilising the cap of the insulin bottle and also for preparing the skin for the injection. The syringe is now charged with insulin in the usual manner and this can be done without removing the insulin bottle from the case. The injection is given and the needle reinserted into the spirit bottle through the rubber cap, which effectively holds it in position. The syringe is then pressed home into its clip. Having drawn some spirit out of the spirit container, the slight negative pressure thus produced prevents any leakage.

Advantages of the case.—It is very small, goes easily into the pocket or handbag, and contains everything necessary for injection. The only article to be removed from the case for the purpose of injection is the syringe. The inconvenience of arranging bottles, cotton-wool, and so on on a table or shelf when giving the injection is thus avoided. It is impossible to drop the insulin bottle as it is not removed from the case.

The case takes a standard record insulin syringe and is made to hold any make of insulin. It can be obtained empty or fitted up from Messrs. John Bell and Croyden, Messrs. Allen and Hanburys Ltd., Messrs. S. Maw Son and Sons, Ltd., and Messrs. C. L. Bencard Ltd.



PSYCHOLOGY IN THE HOME

SOME parents are profoundly interested not only in the minds of children but also in ascertaining the part they themselves play in the making and marring of these immature minds. Dr. F. H. Dodd[1] has attempted to help them in this self-imposed task; his exposition is sober and sound; though he does not indulge in any recondite analysis of the child mind, what he does give us is fair and beyond criticism. He might with profit have dealt more adequately with his subject had he considered many of the unconscious motives governing child behaviour. But it must be remembered that this book is primarily designed for laymen, and he might well have befogged the issue had he dealt with more than the manifest content of family life and the children in it.

SPUMAN FOAM THERAPY.—We have received from Medical Laboratories Ltd., 40, Pall Mall, London, S.W.1, samples of four preparations put on the market by Luitpold-Werk, Munich, through their agency. The preparations are entitled lactic acid Spuman, salicylic acid Spuman, Spuman with a 2 per cent. addition of sulphate of zinc, and Tampospuman. All these are directed to the treatment of inflammatory conditions of the female genito-urinary tract. Spuman contains bismuth and thymol made up with potassium boricotartrate, and can be combined with tannic acid, with ichthyol, with nitrate of silver, or with sulphate of zinc and other salts in accordance with the particular treatment required. The various preparations are supplied in a small flat cone, to which the word "stylus" is given, and on insertion of the stylus into the vagina and cervix a colloidal mass of foam is formed, which interpenetrates the surface of the mucous membrane and its folds. The recommendation for vaginal application in adults is one stylus of 1 g.; for urethral application or for children half a stylus is said to produce the desired effect, but the dosage and direction of treatment vary with the obstinacy of the case. The medical evidence submitted is from various German clinics and is of favourable character.

ERRATUM.—The experimental histological studies of lymphatic capillaries by B. D. Pullinger and H. W. Florey, which was the subject of editorial comment in THE LANCET last week, was published in the *British Journal of Experimental Pathology*, 1935, xvi., 49. The reference was omitted by a printer's error in some of the copies of THE LANCET.

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[1] Common Sense Psychology in the Home. By Frederick H. Dodd, M.R.C.S., L.R.C.P., Physician in Charge of Department of Diseases of Children, Eastern Dispensary. London: George Allen and Unwin Ltd. 1934. Pp. 185. 5s.

ADDRESSES AND ORIGINAL ARTICLES

NEW ASPECTS OF DEFICIENCIES IN NUTRITION*

By Donald Hunter, M.D., F.R.C.P. Lond.

PHYSICIAN, WITH CHARGE OF OUT-PATIENTS, TO THE LONDON HOSPITAL

In the last 25 years the progress of our knowledge of nutrition has been comparable to that of bacteriology at the end of the last century. Following early clinical observations suggesting a relationship between diet and disease the experimental method came into extensive use for investigating the influence of diet upon the growth and well-being of animals. Vitamins were identified and rapid progress has culminated in the recent synthesis of ascorbic acid, the first complete victory of chemists in the field of nutrition. Studies have concerned not only the vitamins but also the metabolism of iron, calcium, phosphorus, and iodine. And now an entirely new method of approach to problems of nutrition has been opened up by the Harvard workers in their studies of pernicious anæmia. Their discovery of a conditioned dietary deficiency disease may well prove to be a more important conception in nutrition than anything which has gone before.

Rickets and Osteomalacia

Pathologists, chemists, and clinical workers are agreed as to the essential identity of rickets and osteomalacia. What difference exists is merely that of age-incidence: osteomalacia is adult rickets. In the industrial towns of England to-day rickets is still a common disease. Osteomalacia is endemic over wide areas in Northern India, Japan, and Northern China, and occurs sporadically in certain parts of Europe. So far as England is concerned, osteomalacia does indeed exist in the distressed areas of the Midlands and the North, but fortunately it is still rare.

Morbid anatomists agree that in rickets and osteomalacia the essential abnormality is a deficient calcification of osteoid tissue. This deficiency is generalised throughout the skeleton. Pommer (1885) considered that in both diseases the broad osteoid seams were due to deficiency in the calcifying mechanism which should convert osteoid tissue into true bone. The experimental studies of E. Mellanby (1918, 1919) constitute the discovery of the cause of rickets. He produced the disease in puppies by deficient diets and cured it by the use of fats containing the antirachitic vitamin. Meanwhile the antirachitic power of ultra-violet irradiation was discovered by Huldschinsky (1919). In children suffering from severe rickets he demonstrated by radiograms the healing effects of the mercury vapour quartz lamp and of sunlight. In 1924 it was discovered that certain foods developed antirachitic powers when exposed to ultra-violet irradiation (Hess and Weinstock). It has since been possible to cure rickets in children by feeding them on irradiated foods. It is the sterols in such foods that can take on antirachitic potency, in particular ergosterol, for vitamin D is a derivative of this substance (Rosenheim and Webster, 1927). In the case of the skin the antirachitic action of ultra-violet irradiation is probably due to the synthesis of vitamin D from the ergosterol which it contains. In 1930 Webster and his co-workers isolated vitamin D in pure form. They extracted ergosterol from yeast and irradiated it in alcoholic solution as it passed through quartz tubes. They then purified the irradiated ergosterol.

The pure vitamin is called calciferol from its power to induce calcification in tissues, especially in osteoid tissue. It is 300,000 times as potent as cod-liver oil weight for weight. The daily requirement for health has been estimated as 0·075 mg. Its physical and chemical properties are quite well worked out and it can justly claim to be the first vitamin standardised on a chemical and physico-chemical basis. The isomeric change responsible for the conversion of ergosterol to calciferol is at present only a matter for speculation; the synthesis of either substance presents problems of extreme technical difficulty.

The blood chemistry is comparable in experimental rickets of rats (McCollum, 1921), in children with rickets (Howland and Kramer, 1921), and in women with osteomalacia (Miles and Feng, 1925). The plasma phosphorus and sometimes the serum calcium is diminished. Adequate treatment restores the low figure to normal. In the absence of vitamin D the utilisation of calcium and phosphorus is impaired. The low blood phosphorus or calcium is promptly restored to normal by the use of cod-liver oil, calciferol, or ultra-violet irradiation. At the same time ossification begins to proceed normally.

Unfortunately those foods that contain generous supplies of calcium or vitamin D are either not generally popular or are rather expensive. They include milk, butter, cream, sardines, sprats, herrings, and green vegetables. It is certain that the majority of people living in towns run the risk of getting insufficient supplies of vitamin D. Except for pregnant and lactating women, adults probably do not need much, but not so the children. Cod-liver oil should be given daily throughout the winter months to children, in whatever social class; during the summer the skin should be slowly browned by exposure to the sun. E. Mellanby (1922) has proved that cereals are rickets-producing, partly because they contain an anticalcifying substance which interferes with calcium and phosphorus relations, and which he has called a toxamin, and partly because they lead to increased growth without at the same time supplying to bone a sufficiency of calcium, phosphorus, and calcifying vitamin. Those cereals which are relatively rich in calcium and phosphorus, such as oatmeal and wheat germ, are specially rickets-producing. This work on the rickets-producing effect of cereals has recently been further confirmed by György (1933), who found that maize meal was more potent in this respect than oatmeal. These discoveries have an obvious bearing on the treatment of rickets in children.

In the treatment of osteomalacia Maxwell (1930) states that given cod-liver oil, good food, and sunlight, the majority of the patients will slowly recover. He finds that most cases require 1–2 oz. of cod-liver oil daily, together with calcium lactate. The cure is permanent, provided the patient takes reasonable care. Some of his patients were found to be well after seven years; others stood the test of a further pregnancy without recurrence of symptoms. So far as China is concerned, this is not the whole story. Poverty is widespread, and until China gets rid of banditry and civil war osteomalacia will remain. What the Chinese want to-day is flocks and herds, milk and meat, with security of life and property (Maxwell, 1923). In India the problem is much more difficult, and emancipation of women must see the end of the purdah system before modern knowledge can be applied as it should.

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* Lecture to the Torquay and District Medical Society on March 7th.

Maxwell (1935) has proved that rickets may occur in antenatal life. Working in China, he took radiograms of the bones of the new-born babies of osteomalacic mothers and demonstrated the typical changes of rickets in the metaphyses. It is of some importance, too, that babies of osteomalacic mothers do get rickets in postnatal life. There is no doubt that the old reports denying the coexistence of osteomalacia and rickets in the same areas are fallacious. Rickets has now been found plentifully in children, where osteomalacia is well known, in Japan (Ogata, 1913), China (Tso, 1924) and India (Green-Armytage, 1928).

Mention must here be made of the influence of diet on the structure of teeth. The occurrence of hypoplasia of the teeth, with defects both in the enamel and the dentine, has been recognised for years in rickets. Such malformations are by no means exclusively of rickety origin, for they occur in other disturbances of metabolism. According to a number of authors a lack of vitamin C leads, in guinea-pigs, to defective teeth (Zilva and Wells, 1919). The changes here commence in the pulp, the dentine being affected later. M. Mellanby (1928) has studied the teeth in dogs and in children. On a diet deficient in vitamin D, particularly if it was rich in rachitogenic cereals as well, the dogs developed severe hypoplasia of the teeth, whereas the controls receiving antirachitic substances in addition had sound teeth. She showed that in children energetic administration of cod-liver oil or irradiated ergosterol lessened the incidence of such defective teeth and of the caries to which they are subject. Further, even in the presence of defective teeth, caries occurred far less readily in children so treated (Mellanby and Pattison, 1928). In two groups of school-children, one group treated and the other not, the average incidence of caries was respectively 1·4 and 5·1. M. Mellanby showed that in dogs dental defects can occur in the first dentition, as a result of a deficiency of vitamin D in the food of the mother. Walkhoff (1929) has demonstrated in guinea-pigs a similar effect in the case of vitamin C.

Aphosphorosis and Osteomalacia in Animals

In recent years veterinary pathologists have investigated the skeletal diseases of domesticated animals, using the experimental method. Their work has thrown considerable light upon disorders of nutrition in general.

Styfsiekte, or "stiff-sickness," is a disease of South African cattle in which the animals develop an intense craving for bones, a symptom which is termed osteophagia. It shows itself in retardation of growth, stiffness, lameness, and spontaneous fractures. In the affected areas the soil and grass are deficient in phosphorus, so that hay may contain less than one-fifth the normal amount of phosphorus. Theiler, Green, and du Toit (1927) have reproduced experimentally "aphosphorosis," or clinically recognisable phosphorus deficiency disease, and have shown not only that it is identical with the naturally occurring South African disease, but also that its histological characteristics are those of osteomalacia or rickets. Sunlight is apparently unable to prevent its occurrence, but the routine use of bone meal abolishes osteophagia and styfsiekte and leads to an increase of the milk yield of cows, better calves at birth, and more rapid growth of young stock.

Theiler (1934) has also been able to confirm the view that the disease known as "equine osteomalacia" is not strictly osteomalacia at all, but osteodystrophia fibrosa, a disease more comparable to osteitis fibrosa of man. A survey of the experimental data makes it clear that the main cause of this disease is a diet of low-calcium, high-phosphorus content. The bone diseases of domesticated animals, rickets, osteomalacia, and osteodystrophia fibrosa, may all be regarded as dietary deficiency diseases. Deficiency of phosphorus leads to rickets and osteomalacia in cattle, excess of phosphorus and inadequate calcium to osteodystrophia fibrosa in equines, and deficiency of vitamin D to rickets and osteomalacia in dogs. The significance of mineral balance, however, is not the same for all animal species. They differ in their physiological reactions. A ration which produces osteodystrophia fibrosa in the horse does not produce it in cattle. Indeed, that disease is apparently unknown in the bovine.

Xerophthalmia

It is recorded in the Papyrus Ebers that night-blindness was recognised and treated with liver a thousand years before the time of Hippocrates. Keratomalacia was first clearly described in England in 1827, and it soon became well known in emaciated infants with diarrhœa. In 1850 a French country doctor in the neighbourhood of Bordeaux cured night-blindness in a young boy by using cod-liver oil (Despont, 1858). Between 1854 and 1857 he treated what he called epidemics of this condition occurring in peasants. He was struck by the specific action of cod-liver oil, and wondered to what constituent this was due. He came very near to the truth when he pointed out that the effect could not be due to its ordinary food value because it worked in such small doses. He records cures in 14 cases, in which the patient was better usually in three days, and always before the tenth day. He afterwards found the condition to occur in seamen on long voyages and in soldiers in barracks. In 1863 Bitot described a lesion of the conjunctiva peculiar to xerophthalmia. He was working in a foundling hospital in Bordeaux. The lesion consisted of whitish or yellowish foam-like spots resembling mother-of-pearl situated on the bulbar conjunctiva just outside the cornea. They were quite small, and looked as if they would easily brush off with a movement of the lids, but actually remained unchanged when the lid was gently rubbed over them. He found that their appearance preceded night-blindness, and he recorded their complete disappearance after the sight returned to normal.

Xerophthalmia is still common in many countries including Russia, India, China, Japan, Central America, and Labrador. It was widespread in Germany, Austria, and Denmark during the time of privation following the war and during the war. In 1917 Bloch showed that many infants in Copenhagen suffering from general malnutrition and xerophthalmia could be cured of both by the use of cod-liver oil. There is a marked seasonal incidence, nearly all the cases ocurring in March and April. The first eye symptoms are dryness of the ocular conjunctiva which becomes wrinkled and shrunken. Later Bitot's spots appear. The disease rapidly spreads to the cornea, which becomes dull, uniformly hazy, and insensitive. Later a greyish necrosis of the sets in, followed by ulceration. This is called keratomalacia.

Denmark exports most of its dairy products, especially butter. Early in the war butter fetched high prices and the Danes were left with margarine and lard, substances deficient in vitamin A. By the end of 1917 xerophthalmia assumed grave proportions, and the State intervened, taking over control of all butter, which was rationed and sold at prices within the reach of all. A sharp decline in the incidence of xerophthalmia followed immediately. Nevertheless, there are in Denmark to-day large numbers of people who were blinded as babies in the war. Thus Blegvad (1924) collected 601 cases occurring between 1909 and 1920. Of these cases 21·5 per cent. died, 27 per cent. became blind, and 24 per cent. had serious impairment of vision in both eyes.

This knowledge comes home to us to-day when we realise that night-blindness has been found to occur in the Durham coal-fields (Spence, 1931). Boys affected complain that as dusk approaches they cannot see to compete successfully in play with their companions in the street. Bitot's spots form the most characteristic sign of the disease. All signs and symptoms are found to disappear on adding 10 c.cm. of cod-liver oil to the diet daily. Neither irradiated ergosterol nor ultra-violet irradiation has any effect. The curative substance is undoubtedly vitamin A.

The experimental work of Tansley (1931) affords an explanation of night-blindness as it occurs in vitamin-A deficiency. She followed the course of the regeneration of visual purple in normal and vitamin A-deficient rats. The visual purple was extracted from the retina by a dilute solution of digitonin and quantitatively estimated by a photographic method. She was able to show that the retinas of the deficient rats contained in every case subnormal amounts of the visual purple.

Milk, cream, butter, cheese, liver, spinach, and carrots are excellent sources of vitamin A, and a great many other common foods contain appreciable amounts. Of vitamin A we almost certainly know the structural formula. Chemists appear to be agreed that it is an alcoholic derivative of about half of the carotene molecule. It has not been isolated in the pure state, nor has a crystalline derivative so far been prepared. The daily requirement for health is unknown, but has been estimated as less than 2 mg. (Underhill, 1934).

There is some evidence that a diet devoid of vitamin A results in diminished resistance to infection, but much work remains to be done in order to establish in a more precise way this relationship between nutritional defect and susceptibility to infection. In a large-scale experiment Green and Mellanby (1928) found infective foci almost without exception in young rats brought up on diets which were complete except for vitamin A. There is also experimental evidence that vitamin A may successfully prevent the infection of animals with different bacteria (Lassen, 1932). Its most striking action is observed when the infection takes place through an epithelial surface. Large doses of vitamin A have been used in the treatment of puerperal sepsis by Mellanby, of measles by Ellison, and of pneumonia by Donaldson. Ellison (1932) tested the effects of a vitamin concentrate rich in vitamin A and D on 300 cases of measles under the age of six, using another 300 cases of similar age as controls. The mortality in the vitamin-treated cases was 3·7 per cent., and in the control cases 8·6 per cent. The vitamin treatment lowered the mortality of cases with pulmonary complications, but did not lower the otological and cutaneous complications. Donaldson (1930) reported a mortality of 8 per cent. amongst 200 cases of pneumonia receiving vitamin A; 400 control cases had a mortality of 13 per cent. It is impossible to say whether this difference is significant, and it is a fact that not all observers have been able to confirm these results.

The observation of Mellanby (1934) that peripheral nerves show signs of degeneration when the diet is deficient in vitamin A has led him to review the evidence in favour of the accepted causes of certain nervous diseases, and to suggest that the nervous lesions are really due to vitamin-A deficiency. In animals he has shown that vitamin A has a protective influence against the appearance of nervous lesions in poisoning by ergot, and he has suggested that the nervous lesions of lathyrism, pellagra, and subacute combined degeneration of the cord may be due to a similar deficiency. Only future work can show how far this is the case.

Beri-beri

At least five B-vitamins have now been identified (Peters, 1934). Of these 3, 4, and 5 are interesting scientifically, but so far they have not been shown to have any clinical application; 4 is necessary for the well-being of rats and 3 and 5 for the well-being of pigeons. There is little, if any, definite proof that a shortage of B-vitamins ever occurs in this country. Deficiency of vitamin B_1 gives rise to beri-beri, a disorder characterised either by multiple peripheral neuritis or by gross œdema, often with heart failure. Beri-beri occurs principally among the rice-eating populations of Japan, the Malay Peninsula, the Dutch Indies, and the Philippine Islands. It may also break out under conditions of starvation, famine, or siege, as it did in the British armies on Gallipoli and at Kut.

In 1928 Bray found large numbers of mysterious deaths under 1 year in the island of Nauru, a mandated territory in the Pacific administered by the Commonwealth of Australia. Forty-five per cent. of the babies born in a year died before the age of 12 months. This was due to infantile beri-beri brought about by a deficiency of vitamin B_1 in the diet of the mother. Inquiry showed that certain white officials had forbidden the native his toddy. This is a fermented sap made from the coconut, and contains large quantities of vitamin B_1. The mothers of Nauru, consuming the milled cereals offered them by the traders, had a greater need of toddy than when living on their original vegetable diet, and when it was denied them their babies died. It is probable that most strong native beers are valuable foodstuffs owing to their high content of yeast. Had it not been for the presence of a wide-awake medical officer the babies would still be dying, and yet another South Sea island would be undergoing a mysterious depopulation. Fortunately timely dietary reforms were made with excellent results (Bray, 1934). Vitamin B_1 was added to the mother's diet and every infant from birth was given each day a teaspoonful and a half of toddy yeast—the yeast which grows in the sap of the coconut spathe. As a result the infantile death-rate dropped from 450 per 1000 births to 92 per 1000 within a year, and this figure was maintained during the five succeeding years, while the birth-rate increased by 60 per cent. During six years after the introduction of these measures there was not a single maternal death in an average of 65 births per year.

The distribution of B-vitamins in nature is wide, and they are not easily destroyed by cooking. Eggs, yeast, and wholemeal bread are potent sources. Vegetables, fruit, milk, and animal organs all contain good supplies, and meat less but still appreciable amounts. Vitamin B_1 has been obtained in a crystalline and probably nearly pure form by several investigators. There is some difference of opinion as to the purity of the various crystalline products, which have been made from rice polishings, wheat germ, and yeast. Details of the structure of the molecule are at present largely a matter of speculation.

Pellagra

First observed more than 300 years ago, pellagra has now been described in many countries, including Italy, Spain, Rumania, and Egypt. It was not recognised in the United States until 1908, but since that date hundreds of thousands of cases have been recorded, principally in the southern States. It is characterised by symmetrical skin eruptions, sore mouth, diarrhœa, subacute combined degeneration of the cord, and ultimately mental symptoms. It is a disease of poor people subsisting usually on a maize diet. Its occurrence in populations eating mainly wheat or rice is something of a rarity. The association of pellagra with maize consumption led to two theories, the first that the disease might be caused by a lack of protein of high biological value, and the second that it might be due to a toxic substance derived from maize. The proteins of maize have been shown to consist to the extent of 58 per cent. of zein, the notoriously incomplete protein lacking the important amino-acids tryptophane and lysine. The work on zein of Osborne and Mendel (1913) shows conclusively that young animals fed on diets containing zein as the sole source of protein could not maintain their weight unless tryptophane was added, and were unable to grow unless lysine was given. The observed good effect on pellagra of adding meat, milk, and eggs to the diet can therefore readily be explained as due to the advantage of giving a richer variety of essential amino-acids.

More recently it has been shown that yeast extracts have a dramatic effect on the symptoms and signs of pellagra. The results of experimental work with rats enabled Goldberger (1926) to identify the pellagra-preventive substance in yeast as vitamin B_2. To fit these facts Chick (1933) has formulated the following theory: pellagra is caused by a toxic substance derived from the maize diet, which can be corrected by sufficient "good" protein, or perhaps by sufficient vitamin B_2 (which is found to accompany the "good" proteins).

It has recently been suggested (Minot, Strauss, and Cobb, 1933) that alcoholic polyneuritis may be regarded as a deficiency disease analogous to the neuritis of beri-beri. The alcohol addict tends to neglect other foods, and can rarely be said to enjoy a good diet; in addition absorption is impaired in the damaged intestinal tract. Alcoholic pellagra is frequently seen in the United States, and the connexion between alcoholism and pellagra has been recognised in Rumania (Aykroyd, 1933) in districts where pellagra is endemic. Here the possibility of a toxic factor in maize should not be overlooked, for alcoholic pellagra became much commoner in America during the Prohibition period in which illicit whisky was distilled principally from maize products. Further, the disease is almost unknown among alcohol addicts in Europe in districts where spirits are distilled from barley or cereals other than maize.

Pellagra is rare in this country. The cases met with are usually secondary to gastro-intestinal disease. In 1925 Bender described three cases of pellagra secondary to lesions of the stomach interfering with nutrition. This paper indicates clearly for the first time the sequence of events and the apparent gastro-intestinal contributing cause of the pellagra. Especially is this true of one of his patients who developed pellagra while being fed through a jejunostomy tube for the cure of a non-malignant gastric ulcer. In 1930 Ellis noted the occurrence of pellagra secondary to tuberculous enterocolitis, with severe diarrhœa in a boy of nine. Simpson (1935) has recorded the complete cure of a case of secondary pellagra by the use of a concentrate of vitamin B_2 prepared from egg-white. The patient was a woman, aged 46, who had developed secondary pellagra two years after an extensive partial gastrectomy for duodenal ulcer.

The distribution of vitamin B_2 among natural foodstuffs is similar to, though not identical with, that of B_1. There are many quantitative differences. The embryo and bran of cereal grains are rich sources of B_1 but are poor in B_2. Egg-white is the one foodstuff yet discovered which contains B_2 unaccompanied by B_1 (Chick, 1930). Vitamin B_2 has lately been divided by Kuhn (1933) into two fractions, one of which is crystalline and is believed to be one of the flavines. Ovoflavine from egg-white is a yellow substance with a green fluorescence, and is highly sensitive to light, a point which may be of importance in relation to the light sensitivity of pellagrins. This work is a striking development of the discovery of vitamin B_2 in egg-white.

Scurvy

It was common knowledge, even in the fifteenth century, that scurvy occurred after deprivation for long periods of fresh foodstuffs. In 1779 the Channel Fleet had 2400 men disabled by the disease after a cruise of only ten weeks. In 1795 introduction of lemon juice into the British Navy as a routine ration led to the disappearance of scurvy amongst sailors. We now possess exact knowledge as to the vitamin C content of various foodstuffs. The juices of lemon, orange, and onion are very rich sources of vitamin C; swede and tomato come next, whereas lime juice, grape juice, potato, carrot, and milk are low down in the list. Vitamin C is destroyed by heat, by oxidation, and by alkali. An acidic substance like lemon juice retains its antiscorbutic activity for a long time, even in the presence of atmospheric oxygen. It should be realised that the heat used in the manufacture of dried milk destroys vitamin C, and that green vegetables should not be cooked with sodium carbonate or bicarbonate.

The story of the chemistry of vitamin C is singularly full of paradoxes and dramatic surprises. Up to four years ago it was generally agreed to be the least stable and the most elusive of all the vitamins. Lemon juice has long been known to possess a remarkable chemical reducing property, but this was always dissociated from the properties of vitamin C. In 1928 Szent-Györgyi isolated from the suprarenal gland hexuronic acid, and concluded that it is identical with "the reducing substance present in active vitamin-C concentrates." In the same year Tillmans made use of this chemical reducing property—the indophenol reduction test—to distinguish fresh from stale or artificial fruit juice. In 1930 he showed that the indophenol titre generally runs parallel with vitamin-C activity. In 1932 he postulated the identity of vitamin C with Szent-Györgyi's hexuronic acid. Later in the same year Waugh and King isolated from lemon juice a substance which closely corresponded with the hexuronic acid of Szent-Györgyi, and showed that daily quantities of 1 mg. prevented scurvy in guinea-pigs. The identity of this hexuronic acid with vitamin C has since been confirmed, and in 1932 Haworth and Hirst synthesised it and called it ascorbic acid to distinguish it from other hexuronic acids.

In the green pods of the Hungarian paprika, *Capsicum annuum*, Szent-Györgyi discovered what is now the richest known source of vitamin C. These pods contain weight for weight four times as much vitamin C as orange or lemon. In 1933 Parsons showed that ascorbic acid would cure infantile scurvy, and Schultzer that it would cure adult scurvy. The protective dose for an adult is less than 50 mg. a day. One gramme would suffice for more than three weeks. In the summer of 1934 the British Graham Land Expedition left England for the Antarctic and the

Oxford University Ellesmere Land Expedition for the Arctic. In each case the equipment included small tubes containing tablets of ascorbic acid for the use of sledging parties. Clearly the problem of transport and storage of vitamin C for remote expeditions is completely solved.

Scurvy is characterised by changes in capillary endothelium, leading to hæmorrhages, and by diminished activity of hæmopoiesis. Thus anæmia may occur apart from hæmorrhage. This anæmia responds to vitamin C and the response is specific, for it does not occur to iron or liver (Mettier, Minot, and Townsend, 1930). In infantile scurvy the bones are affected. In addition to subperiosteal hæmorrhage there is cessation of osteogenetic activity, arrest of endochondral ossification, but no deficiency in the calcification of the matrix of cartilage. These changes result in osteoporosis, sometimes with spontaneous fracture.

Occasionally scurvy actually comes on while the patient is under medical treatment. Thus Davidson (1928) reports two cases under treatment for gastric ulcer, one by the Sippy method and one by the Lenhartz method. In both cases scurvy resulted. Rapid recovery occurred when orange juice was added to the diet.

Endemic Goitre

It has been established by recent observations that in certain parts of the world there is a danger of human beings and animals failing to secure in their food a sufficient supply of iodine. The human thyroid gland contains up to 15 mg. of this element, representing an iodine content 50 times as great as that of any other tissue. The daily iodine requirement of an adult is at the most 0·05 mg. In 1926 Harington established that thyroxine was a phenyl ether of tyrosine containing four iodine atoms. He then synthesised it. A lack of iodine in the diet prevents the formation of thyroxine, and leads to hyperplasia and enlargement of the gland.

In the Yellowstone River Valley there was at one time a loss of approximately 1,000,000 young pigs and numerous lambs, calves, and colts each year as the result of thyroid disease. Owing to the shortage of iodine in the soil, sows had goitres and gave birth to litters of dead hairless pigs showing great enlargement of the thyroid gland. This most serious problem in animal production was studied by Smith (1917) who found that it was only necessary to administer sodium or potassium iodide to the pregnant animals in order to prevent the condition.

Keith (1924) studied the problem of goitre in the Pemberton Valley, British Columbia. At the lower end of this valley is an Indian reserve, peopled by about 150 Indians. In the Indian village no sanitation has ever been attempted, but salmon is eaten in quantity. No case of goitre has ever been recorded among these Indians, the reason being that the salmon provide iodine obtained from the sea. White settlers noticed as they ascended the valley that the incidence of goitre and fœtal athyrosis increased in their animals. All hens, ducks, and turkeys brought into the valley appeared to thrive but their eggs, though producing embryos, failed to hatch out. Almost every woman and many of the men coming into the valley would develop goitre within a few months or a year. All the babies born in the district had goitre. The use of iodine was recommended and it acted in a miraculous way; all the goitres disappeared from the animals and no further trouble in rearing stock or fowls occurred. Any resident with a goitre took a little iodine until it disappeared. The same effect was obtained by drinking the milk of cows receiving iodine. It cost $2 a year for iodine to keep 100 cattle, 12 horses, 30 pigs, 200 chickens, and all their progeny free from goitre. It is now impossible to find a goitre anywhere in the whole valley, either in animal or in human being.

In at least five regions where goitre is endemic contrasts of the iodine content of the diet with the incidence of goitre have been made for goitrous and non-goitrous districts. There is complete agreement between these surveys—namely, that a striking inverse relationship exists between the content of iodine in the diet and the proportion of goitrous individuals among the total population. The evidence associating undue lack of iodine in the diet with prevalence of endemic goitre strongly suggests a causative relationship between the two, but it does not afford final proof that lack of iodine can be the sole cause of this goitre. There is good evidence that such a goitre can arise from other causes, but there is overwhelming evidence that in communities where the diet contains a sufficiency of iodine such endemic goitre is extremely rare.

In certain regions in the Himalayas McCarrison (1927) has found that drinking-water relatively rich in iodine does not prevent the occurrence of endemic goitre in the presence of a high degree of bacterial impurity. Further the substitution of a bacteriologically pure for an impure water has caused the rapid and complete disappearance of the disease from a place where it has been endemic for 70 years, although the new water-supply contains less iodine than the old. He claims to have induced goitre in man by the administration of sediments from contaminated drinking-water and to have cured it by intestinal antiseptics. Animal experiments have suggested a goitrigenic action of cabbage. The active material was believed to be a glucoside. It is known that cyanides are components of the glucosides in certain vegetables. Hence Marine (1932) injected various organic cyanides into young rabbits and goitres were produced.

It seems therefore that endemic goitre can arise from more than one cause, including lack of iodine, some goitrigenic factor in cabbage, and a water-borne infective agent. The important thing is that iodine acts as a shield against endemic goitre, and iodine prophylaxis is the most important preventive measure. This usually takes the form of legislation ensuring the addition of minute amounts of iodine compounds to table salt. The proportion used in Switzerland is five parts (of potassium iodide) per million, and in New Zealand four parts per million. At the present time iodised table salt in different countries varies widely in its iodine content. Thus that used in Canada contains 20 times as much iodine as the Swiss supplies. The excellent results of Swiss prophylactic measures suggest that the proportions used in Switzerland and New Zealand are of the right order.

Nutritional Anæmias of Infants

An anæmia of hypochromic type occurring equally in both sexes has been known at various times as pseudo-chlorosis of infants, alimentary anæmia, and cow's milk anæmia. It is due at least partly to inadequate iron intake. Milk is notoriously poor in iron, cow's milk more so than human milk.

Mackay (1931) has shown that 40 per cent. of breast-fed babies and 70 per cent. of artificially fed babies in the hospital class are anæmic. She was able to cure this anæmia by adding to their feeds iron and ammonium citrate. A solution of 1½ grains to a teaspoonful of water was prescribed and instructions given to the mother to add this to the feeds, beginning with a few drops and increasing gradually until a teaspoonful was given with each feed. Gradual increase of the iron dosage is essential, otherwise the infant may develop colic, vomiting, or diarrhœa, and the treatment might then unfortunately be stopped. The mother must also be warned that the stools will be dark in colour. Certain proprietary brands of infant foods are now available in which iron and ammonium citrate has been incorporated in suitable amounts.

The presence of anæmia in an infant reduces its resistance to such bacterial infections as otitis media or pyelitis. If such infection is of sufficient severity to lead to systemic disturbances, this in turn is likely to increase the severity of the anæmia. In such ill babies it is necessary to begin the administration of iron very gradually, but ultimately doses of grs. 5 to 10 of iron and ammonium citrate daily should be given. There seems little doubt that the prophylactic administration of iron at an early age leads to a considerable diminution in child morbidity, and its use should be encouraged, especially among artificially fed infants.

Anæmia is perhaps less common in the babies of the wealthier classes. There would be little need for iron therapy in infants if all women could be given an adequate diet during pregnancy, and if the milk and cereal diet of infants were to be supplemented at the age of nine months with meat, eggs, and green vegetables.

Idiopathic Hypochromic Anæmia

Recent studies have shown that idiopathic hypochromic anæmia is a deficiency disease (Kaznelson, 1929; Witts, 1931). The term hypochromic refers to the pallor of the red cells, or in other words to the low colour-index. In hypochromic anæmias the red marrow is actively producing red cells from normoblasts. The mechanism at fault is not the production of the red cell stroma but the provision of hæmoglobin to fill that stroma. This is the business of iron metabolism. Idiopathic hypochromic anæmia is probably due to a deficiency in the power of the alimentary canal to deal with iron in such a way as to make it available in hæmoglobin production. It occurs almost invariably in women, and especially in the childbearing period of life. The patient is tired and breathless, the ankles become puffy, the tongue may be sore, difficulty in swallowing may occur, the hair begins to fall out, and the finger-nails are brittle, tender, and often concave, a condition called koilonychia. Severe dyspeptic symptoms are occasionally found; amenorrhœa is common. Achlorhydria is frequently present. Its significance is seen in the fact that iron is best absorbed from an acid medium. The normal diet provides only a small positive balance of iron, especially for women who are menstruating and bearing children, and this soon becomes a deficit if the diet is poor and absorption is diminished by achlorhydria. In one-third of all cases the spleen is palpable. It is firm and soft, and never extends more than a few centimetres below the ribs. It completely recedes beyond the costal margin on repair of the anæmia.

In treatment large doses of iron must be given. Where the hæmoglobin figure is very low the patient must receive daily grs. 90 of Blaud's pill, freshly prepared and crushed. The idea that large doses of iron cause indigestion and constipation is by no means true. The dyspeptic symptoms are usually cured by Blaud's pill within six or eight weeks. When the hæmoglobin approaches the normal figure the dose of Blaud's pill can be reduced, though it is highly probable that the patient will require to take iron always. Iron and ammonium citrate may be given instead of Blaud's pill, but the effective dose is at least double. Iron should not be given by injection, owing to the long duration of treatment and the difficulty of giving adequate doses by this route. It is important to inquire into the diet, and to see that the patient takes plenty of meat, eggs, and green vegetables.

Pernicious Anæmia

Workers at the Harvard Medical School, in one of the most remarkable researches in the history of medicine, have shown that liver and stomach contain a principle curative in pernicious anæmia (Minot and Murphy, 1926), and that this principle is normally elaborated in digestion by the stomach and stored in the liver. The normal stomach secretes a ferment which is not hydrochloric acid nor pepsin nor rennin (Castle, 1929); this "intrinsic factor" acts on the proteins of the food to produce a hæmatinic principle which is necessary for the maturation of megaloblasts and the normal delivery of red cells into the circulation. Thus pernicious anæmia is a nutritional disorder of a special sort, and may be spoken of as a conditioned dietary deficiency disease. It is a disease of the stomach with secondary changes in the marrow, for in the absence of the hæmatinic principle the red cellular megaloblastic marrow remains functionally useless.

In the treatment of pernicious anæmia liver extract must be given by injection or by mouth, and the dosage regulated by the red cell count. Extract given by injection is at least thirty and perhaps fifty times as potent as that given by mouth. There is *no standard dose.* Severely anæmic patients may require 4 c.cm. for a few days, the dose being reduced to one-half or less of this amount after the maximum reticulocyte response has occurred. The red cell count must then be followed, and a maintenance dose determined which will keep it at five million. In many cases the maintenance dose is 1 c.cm. a week. The most important single fact about treatment is to give enough of the material. No ill-effects of overdosage are known. Infections, arterial degeneration, and hypothyroidism may interfere with the effect of the active substance, demanding increased dosage. Larger doses are required to improve or inhibit the progress of subacute combined degeneration of the cord than to permit of normal hæmopoiesis being maintained.

Minot (1935) has observed critically over two or three years 100 cases of pernicious anæmia, including 26 with advanced subacute combined degeneration of the cord. All of these were treated with injections of liver extract. In no case did a single objective sign in the nervous system become more marked, nor did any abnormal sign develop. Certain patients who were originally unable to walk became sufficiently improved to return to work. Failure to arrest the progress of neurological lesions, like failure to restore the blood to normal and keep it there, usually means that more liver is required. No claim is of course made that parenteral therapy acts in a different manner from oral therapy. Thus certain cases treated by Minot for over eight years by the oral method have shown no progress of their neurological lesions. It is possible in many cases to use adequate oral treatment, but, speaking generally, parenteral therapy is vastly superior, more convenient, and considerably cheaper; there is no doubt that it has come to stay.

Wilkinson (1935) has had excellent results using desiccated pig stomach, starting with an ounce a day until the blood count was normal and then reducing to perhaps a quarter of an ounce every three days. His cases have been observed over periods up to six years. Of 441 patients with pernicious anæmia, 92·5 per cent. were well, 3·4 per cent. had relapsed, 3·2 per cent. had died from other causes without anæmia, and 0·9 per cent. had died with anæmia. The nervous changes due to cord involvement responded well. None had developed subacute combined degeneration when under treatment, while those who already had cord changes had shown no increase of their nervous symptoms and indeed many bedridden cases had been able to return to work.

Anæmia following Gastric Operations

Changes in gastro-intestinal function affecting hæmopoiesis may result from operative interference with the stomach. We know quite definitely that both partial gastrectomy and gastro-enterostomy are occasionally followed by anæmia. At present it is impossible to say exactly why operative interference causes anæmia at all, and the evidence is insufficient to incriminate one type of interference rather than another. There is no apparent relationship between the degree of hypochlorhydria and the severity of the anæmia, nor between the occurrence of diarrhœa and the anæmia. We now possess an explanation of those cases which remain well without anæmia for many years after subtotal gastrectomy, for the work of Meulengracht (1935) has shown that the "intrinsic factor" is produced in the duodenum as well as in the pyloric portion of the stomach.

About 125 cases of anæmia following gastric operations have been recorded in detail. Of these 25 were cases of pernicious anæmia—15 following partial gastrectomy and 10 following gastro-enterostomy—and 100 were cases of secondary anæmia. There may be a long latent period between operative interference and the development of symptoms. Thus, in one series, the average period was six years and the longest fifteen years. It is quite well established that some patients develop hypochromic microcytic anæmia, and others hyperchromic megalocytic anæmia after the same operative procedure; the reason for this is difficult to see. Perhaps a study of the type of diet taken by patients during treatment for chronic ulcer both before and after operation might show that deficient intake of essential substances plays a part. Meat and green vegetables, so essential to normal hæmopoiesis, are too often lacking from the menu of such patients. Clearly accurate hæmatological studies over many years of a large series of cases following operation would be of great interest. The incidence of anæmia following gastric operations is so small that there is no need for alarm. Fortunately, too, when it does occur the results of treatment with liver or iron, according to the type of anæmia present, are satisfactory.

Idiopathic Steatorrhœa: Gee's Disease

In 1888 Samuel Gee published an account of the "cœliac affection," giving a clear description of a digestive disorder occurring in people of all ages, but especially affecting young children. He describes in detail the pale, bulky, and offensive stools, notes the occurrence of a similar disease in India, and points out the negative character of post-mortem examinations in fatal cases.

Recent investigations of Gee's disease suggest that the condition is due to a disturbance of gastro-intestinal function resulting in deficient production, absorption, or utilisation of one or more essential factors. To some extent it shares with pernicious anæmia the characteristics of a conditioned dietary deficiency disease. It occurs in patients born in Great Britain who have never resided abroad. One [illegible] features occur; fatty stools, with or without diarrhœa; dilatation of the colon, tetany, osteomalacia, infantilism, anæmia, and skin lesions sometimes resembling pellagra. In a group of 15 cases recently investigated (Bennett, Hunter, and Vaughan, 1932) steatorrhœa and disturbances of calcium metabolism were alone common to the whole group. Changes in the skeleton were found in all cases investigated. Radiograms showed osteoporosis and often florid rickets. In 3 cases histological examination of portions of bone showed osteoporosis and osteomalacia. Tetany occurred in 14 cases and clubbing of the fingers in 9.

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The blood count was either normal or showed (i) hypochromic anæmia, (ii) hyperchromic megalocytic anæmia, or (iii) erythroblastic anæmia. No relation between the type and severity of the anæmia and other symptoms was established. In 13 cases out of the 15 the serum calcium was low and in 10 the plasma phosphorus was low or normal. Calcium balance estimations showed high figures for fæcal output and very low figures for urinary output.

Treatment presents great difficulties. The steatorrhœa must be controlled by a low-fat diet. The best way to secure a low-fat, high-calcium diet is to use skimmed milk together with Casec or some other preparation of calcium caseinate. Where tetany occurs calcium lactate must be given fasting, in doses of 5 grammes three times a day. Vitamin D in a solid medium should be given in every case where there are clinical or radiological signs of rickets, osteomalacia, or osteoporosis. General ultra-violet irradiation is also of value. These measures may relieve bone pain, though any relapse of diarrhœa is liable to interfere with this good effect. Treatment of the anæmia must depend upon proper examination of the blood. Where it is hypochromic in type, large doses of iron must be given until the hæmoglobin figure reaches normal. This may occur after the use of Blaud's pill grs. 30 three times a day for eight weeks or more. Where hyperchromic megalocytic anæmia is present, injections of an active preparation of liver must be repeated until the red cell count remains at five million. The proper maintenance dose must then be worked out; it is often 1 c.cm. per week. As in the case of tropical nutritional anæmia (Wills, 1931) marmite by mouth may be used instead of liver, as much as 12·0 g. daily usually being required (Vaughan and Hunter, 1932). Whatever the form of the anæmia, it is essential to remember the importance of adequate dosage.

There is no doubt that the results of treatment are more disappointing in the adolescent and adult cases than appears to be the case in children suffering from cœliac disease. Some cases respond satisfactorily and remain well under treatment. In others all that is accomplished is the alleviation of one or more symptoms and the temporary arrest of the downward progress. It is none the less gratifying to see the great improvement in the anæmia of many of the cases, and the recovery from the pain and disability of osteomalacia in others. Often there is a great change for the good in the mental outlook of a dwarfed, crippled, anæmic patient as he is gradually relieved from his disabilities, especially the anæmia. Unfortunately one group of physical signs and symptoms may clear up completely, and yet the patient may die of inanition. Thus the pellagra-like skin lesions may heal under treatment with marmite yet relapses of diarrhœa may result in the death of the patient, the skin remaining normal.

Until quite recently there were those who held that the conception of vitamin deficiencies wa[illegible] that the chemist would never identify accessory factors in food, and that pernicious anæmia was due to changes in the bone-marrow analogous to malignant disease and therefore quite incurable. Plain answers can now be provided. International standards and units have been adopted for vitamins A, B_1, C, and D, and vitamins B_1, B_2, C, and D exist in crystalline form. It is now a commercial possibility starting with a pennyworth of starch to synthesise from it a gramme of ascorbic acid and to sell this for a shilling, so that the explorer can carry tablets which protect him from scurvy at the cost of threepence a week. The patient with pernicious anæmia can be kept alive and well by weekly injections of liver extract costing sixpence.

However, in spite of so much ground gained our knowledge is still imperfect. Recent studies suggest that nutritional failures in man are often more complicated than the results of animal experiments would indicate. Thus in the case of vitamins there is already some evidence that nutrition of the skin depends on B_2 and A, of nerve tissues on B_1 and A, and of teeth on D, C, and A. With regard to physiological needs, we are ignorant as to the most desirable diet in childhood, at puberty, and during pregnancy, and we know little as to the optimum requirement of first-class protein and of vitamins. In pathological states such as idiopathic steatorrhœa and sprue we have only hints as to the truth. The conception of conditioned dietary deficiency diseases is clearly important, but its development is hampered by our ignorance on the whole question of absorption from the gastro-intestinal tract.

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MANDELIC ACID IN THE TREATMENT OF URINARY INFECTIONS*

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THE ketogenic diet, first introduced by Clark[1] and Helmholz[2] in 1931 for the treatment of urinary infections, has been widely adopted and has proved highly successful, especially in cases in which there is no underlying urinary obstruction. The treatment suffers however from the objection that it requires rigid supervision both of the patient and of the diet; it is therefore unsuitable for use outside an institution, and patients with chronic infection of the urinary tract are not ill enough to require in-patient treatment. Moreover the ketogenic diet is not pleasant to take, and in order to be effective it must upset the normal physiological state of the patient.

Fuller (1932)[3] showed that the effective bacteriostatic factor in the urine of patients on the ketogenic diet was β-hydroxybutyric acid and that this acid exercised, in vitro, a strong bacteriostatic action below pH 5·5. This has been confirmed by Wells (1934).[4] The administration of β-hydroxybutyric acid by mouth under normal metabolic conditions is ineffective in the control of urinary infections since the acid is completely oxidised; it has, however, been administered orally by Fuller and Colebrook[5] to reinforce the effect of a dietary ketosis and it may have a limited use as a bladder wash-out in cases of chronic cystitis. Fuller has shown that aceto-acetic acid and

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TABLE I.—BACTERIOSTATIC EFFECTS OF VARIOUS ACIDS ON GROWTH OF B. COLI IN VITRO

Acid.	Formula.	Max. pH at which 1 per cent. concentration has been found effective.	Min. concentration found to be effective at pH 5.	Remarks.
		pH.	Per cent.	
β-hydroxybutyric acid .	$CH_3.CHOH.CH_2.COOH$	5·5*	0·3*	The effective factor in the ketogenic diet.
β-hydroxypropionic acid	$CH_2OH.CH_2.COOH$	5·5*	—	Bacteriostatic in vitro.
Lævulinic acid	$CH_3.CO.CH_2.CH_2.COOH$	6·0	0·25	Bacteriostatic in vitro.
Lactic acid	$CH_3.CHOH.COOH$	No effect at pH 5·4	—	—
Pyruvic acid	$CH_3.CO.COOH$	No effect at pH 5·0	—	—
Benzoic acid	$C_6H_5.COOH$	6·0	—	Bacteriostatic in vitro.
Hippuric acid	$CH_2(NH.OC.C_6H_5).COOH$	5·0 (No effect at pH 5·6)	—	Slight bacteriostatic power.
Benzoylacetic acid ..	$C_6H_5.CO.CH_2.COOH$	8·0	0·1 effective at pH 5·3	Highly bacteriostatic in vitro.
β-phenyl-β-hydroxypropionic acid.	$C_6H_5.CHOH.CH_2.COOH$	—	0·2 effective at pH 5·5	Bacteriostatic in vitro.
Mandelic acid	$C_6H_5.CHOH.COOH$	6·2–6·3	0·4 effective at pH 5·1–5·2	Bacteriostatic in vitro.

* Concentrations calculated as per cent. sodium salt.

acetone have slight bacteriostatic powers, in vitro, compared with β-hydroxybutyric acid.

The possibility suggested itself that a keto- or hydroxy-acid might be found which would combine effective bacteriostatic power with resistance to oxidation in the body. Such an acid, if excreted unchanged in the urine and if non-toxic, should be able to replace the ketogenic diet. As a preliminary test, a number of acids were compared with β-hydroxybutyric acid in respect of their bacteriostatic powers in vitro. The results are summarised in Table I.

Preliminary Experiments

all experiments urine was used as the medium. sterilised by filtration and the concentration acid to be tested and the pH were adjusted g to the experiment. The acid content er adjusted before filtration by adding a quantity of the acid followed by the equiva- nt of NaOH, or after filtration by adding d volume of a filtered neutralised solution in urine.

aining 5 c.cm. of the medium were used in ents and the pH was adjusted by adding quantity of HCl or NaOH.

volume (usually 0·1 c.cm.) of a culture or of *B. coli* was added and the numbers of n. present at the start, and after 24 hours' 7° C., were estimated by plating out the cultures, either undiluted or in dilutions of 1 in 100, 1 in 10,000, or 1 in 1,000,000 in blood agar plates. The plates were layered with agar after cooling to prevent spreading, and the colonies on the plates were counted after 24–48 hours' incubation.

The cultures of *B. coli* used were the two stock laboratory cultures and also various strains of *B. coli* isolated from the urines of infected patients.

Of the aliphatic acids tested, β-hydroxypropionic and lævulinic acids were found to possess satisfactory bacteriostatic powers. It seemed unlikely that the former could escape oxidation in the body and it was therefore not further investigated. Lævulinic acid, reputed to be excreted unchanged by dogs (Weintraud,[6] 1894), was administered to two patients with pyelitis of pregnancy but with no good results. Of the aromatic acids, benzoylacetic and mandelic acids were selected for further trial. β-phenyl-β-hydroxypropionic acid was excluded owing to its inaccessibility, whilst it is known that benzoic acid given by mouth is excreted in the urine as hippuric acid, the bacteriostatic powers of which are inferior to those of the other aromatic acids investigated.

Benzoylacetic acid had the strongest bacteriostatic powers of any of the acids tested. Three grammes of the acid were given to a normal man with no toxic effects. The acid was apparently rapidly excreted in the urine which gave a strongly positive ferric chloride

TABLE II.—BACTERICIDAL ACTION OF MANDELIC ACID IN VITRO

The comp result of a series of experiments at varying pH values with cultures (18–48 hours) of different strains of *B. coli*

Volume of cultu to 5 c.cm. of	Organisms per c.cm. 0 hours.	Organisms per c.cm. 23–26 hours.								
		1 per cent. mandelic acid.					0·5 per cent. mandelic acid.			1 per cent. β-hydroxybutyric acid.
		pH 5·0	pH 5·3	pH 5·4	pH 5·6–5·7	pH 5·7	pH 5·1	pH 5·4–5·5	pH 5·7	pH 5·2
·1 c.cm. (undiluted)..	7,000,000–33,400,000	0	0	360,000	16 mill.	20 mill.	80	8 mill.	44 mill.	580,000
·1 c.cm. (1/100 dilution	70,000–334,000	0	0	46	24 ,,	24 ,,	0	12 ,,	34 ,,	1,400
·1 c.cm. (1/10,000 dilut	700–3,340	0	0	2	18 ,,	20 ,,	0	20 ,,	24 ,,	38
·1 c.cm. (1/1 mill. dilutio	7–33	0	0	0	0	0	0	2	32 ,,	0

TABLE V.—CLINICAL TRIAL OF MANDELIC ACID

Sex and age.	Predominant organism.	Nature of case.	Duration of infection.	Results.		Remarks.
				Clinical.	Bacteriological.	
M. 64	*B. coli.* *Staph. albus.*	Chronic cystitis.	About 1 year.	Cured.	Cured.	See case report.
M. 72	*B. coli.*	,,	,,	Improved.	Improved.	Prostatic calculi. See case report.
F. 22	,,	Acute cystitis.	3 weeks.	Cured.	Cured.	See case report.
F. 13	,,	Chronic pyelitis.	3 years.	Improved.	Improved.	Urine became sterile but relapsed. Still under treatment.
F. 24	,,	Acute pyelitis.	1 month.	Cured.	Cured.	Acute infection of one urinary tract. Other kidney recently removed for hydronephrosis.
F. 12	,,	Chronic pyelitis.	1 year.	Improved.	Improved.	Was improving and bacterial count diminished when casts appeared. Treatment stopped. Relapsed.
F. 20	*Staph. albus.*	Pyelitis of pregnancy.	3 weeks.	,,	,,	Postnatally, urine not sterilised by mandelic acid.
F. 33	*B. coli.*	,,	1 week.	,,	No effect.	Very ill with pyelitis last pregnancy. Progressing well.
F. 25	*B. coli.* *Staph. albus.*	Chronic pyelitis and pregnancy.	6 months this attack.*	No effect.	,,	See case report. Ketogenic diet also failed.
F. 22	*B. coli.*	Pyelitis of pregnancy.	1 week.	,,	,,	—
F. 24	,,	,,	6 weeks.	Cured.	Cured.	See case report.
F. 19	,,	,,	3 ,,	Much improved.	No effect.	Acute infection with pyrexia. Still under treatment.

* Infected since 1931.

ad become sterile, she had no further nocturnal
uency while she was taking the acid.
f the 6 cases of urinary infection, unassociated
regnancy, all have been clinically improved,
have been cured. In one of the 3 cases in
this result was not achieved, the urine was
the 24-hour d as sterile after four to five days' treatment
ier relapsed. In a second case (see report of
as a meas below) the failure to cure may have been
n the ur urinary obstruction, the presence of which
m spec vell-recognised cause of failure of the ketogenic
In pyelitis of pregnancy urinary obstruction
an important part; of 6 such cases treated
mandelic acid, 4 have been definitely improved,
es of ing cured, and 1 of the two failures was also
litis lieved by the ketogenic diet. Miss G. H. Dodds,
ble has tried the ketogenic diet on a series of cases of
ade litis of pregnancy at University College Hospital,
llo nsiders the results so far obtained with mandelic
ated to be more promising. In her series of 14 cases,
fe, obtained sterile urines, 2 improved but still had
ected urines, while 8 did not respond at all to the
tment (personal communication). It has been
ested that the bacteria in the urine, if not rapidly
inated, may in the course of time become more
co tant to the bacteriostatic agent. Intermittent
y with mandelic acid is therefore being tried
treatment of resistant cases.
lic acid has so far only been tried on one
acute pyelitis of pregnancy with a high
ume re; the result has been promising.
to 5 c. the main causes of distress to a patient
had a urinary infection is the fact that
is very liable to recur. Such relapses
cm. (undiluted).. ort of Case 1) to respond favourably
tment with mandelic acid, and it is
.cm. (1/100 dilution occasional course of the acid may
quency.
c.cm. (1/10,000 dilutiions have been observed in the
c.cm. (1/1 mill. dilutio delic acid. It is of course neces-
he ketogenic diet, to control the urinary pH by estimation with methyl red. It seemed possible, since mandelic acid is foreign to the body and is not metabolised, that the treatment might cause renal irritation, and specimens of urine have been repeatedly tested to note any occurrence or increase of albuminuria. In two cases, granular and hyaline casts and an occasional red cell, previously absent, were found in the urine following improvement on mandelic acid therapy; in both cases the treatment was stopped, and within a few days the casts disappeared from the urine. One of these cases was a woman, aged 24, who had infection of one urinary tract, the other kidney having been recently removed for hydronephrosis. She had had some renal infection as a child. The other case, a girl aged 12, had had chronic pyelitis for over a year and was receiving mandelic acid while in hospital for treatment of a chronic abscess. She was one of two cases in which an increase in albuminuria was noted. In the other case, the reappearance of albuminuria was probably not due to the mandelic acid (see report of Case 4). Mandelic acid has been given to a patient who was known to have albuminuria following renal disease in pregnancy, and there was no evidence of increased renal damage; it has been given daily over a period of one month to a case of pyelitis without producing any albuminuria, and it therefore is not a general renal irritant. The exact significance of the casts in these two cases is thus not yet clear, but their occurrence must be taken as a warning that, at present, care should be exercised in the use of mandelic acid in the presence of any renal impairment, and that in all cases a watch should be kept on the urine. No other complications due to the acid have been noted, beyond some buzzing in the ears and temporary deafness of which two or three patients have complained.

Though Pribram (1904)[9] showed that
was an effective diuretic in animals
to its use in clinical medicine has be

the purpose described in this paper it can readily be used in ambulatory treatment, and it does not upset the patient. The treatment is not expensive. One kilogramme of the acid, which is an ordinary commercial product, costs at present 70*s.*, so that treatment for ten days with 12 g. a day costs about 8*s.* 4*d.* This is not more expensive than the ketogenic diet which requires not only special foodstuffs but also expert preparation.

CASE REPORTS

CASE 1.—A doctor, aged 64, had suffered from chronic cystitis for over a year. He had had several acute attacks, with pain, shivering, marked frequency of micturition, and rises of temperature, and following the last flare-up in April, 1934, the condition had become chronic. The urine was always turbid and contained large numbers of pus cells and *B. coli* and also some staphylococci. The cystitis persisted despite various forms of medical treatment.

On Dec. 3rd, 1934, he started taking mandelic acid (12 g. in die) and ammonium chloride, whilst carrying on his usual work. Ten days later the urine was much clearer and the growth markedly decreased, and after 17 days on the drug, the pathologist's report showed "few pus cells in the centrifuged deposit. Cultures give a very few colonies of *B. coli* and a few *Staph. albus.* This is the best specimen since the urinary condition started." The mandelic acid was stopped and three weeks later the urine was clear, with no deposit, a very few leucocytes were seen in the centrifuged deposit, and on culture it gave only a few colonies of *Staphylococcus albus* and no *B. coli.*

The patient was seen again nearly three months later. During that time he had had two slight relapses with frequency and bacilluria, but in each case three or four days' treatment with mandelic acid had caused a complete recovery and for the past month he has been symptom-free with no treatment. The last specimen of urine examined on March 20th was clear, contained no pus cells, and was sterile on culture.

CASE 2.—A man, aged 72, was admitted to Westminster Hospital under Dr. A. W. Stott in January, 1935, with auricular flutter and a chronic *B. coli* infection of his urinary tract.

He had previously been in hospital in November, 1933, when he was admitted for treatment of a chronic sinus following an ischiorectal abscess. While in hospital he developed a urinary infection and on examination was found to have an enlarged prostate and calculi in his bladder. He also had auricular flutter. Two stones were removed from his bladder and he passed a third shortly after discharge.

He attended the out-patient department regularly, and despite treatment with various drugs his urinary infection persisted. Though no stones were present in his bladder on his second admission, his urinary condition was unaltered. He had a number of prostatic calculi.

On Jan. 30th he started treatment with mandelic acid. His urine became highly acid and he complained of some burning pain on micturition. The urine became clearer and the number of *B. coli* fell, and on Feb. 6th culture showed only 5 colonies per drop. He was kept on the acid, but though he improved clinically, sleeping and feeling better, and though his urine became clear apart from a deposit of mucus, it always contained pus cells and it remained infected, growing between 30 and 90 colonies per drop. While on treatment he had some granular and hyaline casts in his urine, but these had been noted in his urine on a previous occasion. He always had a trace of albumin in his urine.

While his urinary infection was controlled, a further attempt to stop his auricular flutter with digitalis and quinidine was made but failed. On Feb. 28th the mandelic acid and ammonium chloride were stopped and he was placed on alkalis and free fluids. When he was discharged on Feb. 8th his urine was again turbid and contained large numbers of *B. coli.* He has recently started a second course of mandelic acid as an out-patient, and after one week's treatment there were again only 7 colonies per drop of urine on culture.

CASE 3.—A woman, aged 22, was admitted to University College Hospital under Prof. T. R. Elliott. For three weeks before admission she had had frequency of and pain on micturition. On admission she was found to have a *B. coli* cystitis and was treated with large doses of alkalis and was encouraged to drink as much as she could. She improved considerably, but her urine remained infected and she still had slight pain on micturition. On Jan. 29th her fluid intake was restricted and she was started on ammonium chloride 8 g. daily. On Feb. 1st, though feeling well, her urine was still infected and mandelic acid was started. A week later she felt perfectly well, was getting up, and had no nocturnal frequency. On Feb. 11th her urine contained a few epithelial cells, had a very faint trace of albumin, and showed no growth on culture. She was discharged, and 14 days later her urine was still sterile and she was feeling perfectly fit.

CASE 9.—A primipara, aged 25, four months pregnant, was admitted to University College Hospital under the obstetric unit on Nov. 5th, 1934, with pyelitis. She had had a dragging pain in her back, frequency, and scalding on micturition for some six months. She had been in hospital in 1931 and 1933 for treatment of a chronic *B. coli* cystitis and had had recurrent attacks of frequency and pain in her right side.

Her urine on admission was clear, an uncentrifuged drop showed numerous organisms while there were a few pus cells in the centrifuged deposit. On culture it grew *B. coli.* On Nov. 15th she was started on mandelic acid treatment, but her condition did not improve and the urine remained infected and became slightly more turbid. She was vomiting a lot, and on Dec. 3rd, following some slight uterine pains, the acid was stopped.

On Dec. 11th she was started on the ketogenic diet, but though her urine, with the aid of ammonium chloride, was kept acid, and though strongly positive Rothera and slightly positive ferric chloride reactions were obtained in her urine, she did not improve, and on discharge on Jan. 1st, 1935, her urine was still infected. She was afebrile throughout her stay in hospital and both the mandelic acid and the ketogenic diet appeared to be without effect on the infection. An intravenous pyelography showed no abnormality of her urinary tract.

CASE 11.—A primipara, aged 24, six and a half months pregnant, was transferred from another hospital to the obstetric unit at University College Hospital on March 1st, 1935. She had been treated for the past five weeks for pyelitis, complaining of pain in the back and loins, frequency of micturition, and shivering attacks. An intravenous pyelography done at the other hospital showed a well-marked hydronephrosis of both kidneys with a slight impairment of excretion in the five-minute film. No calculus was seen. She had been treated with large doses of potassium citrate, but though her general condition had improved the infection persisted.

On admission to University College Hospital she had no pyrexia, but her urine was still cloudy, contained a trace of albumin, and the uncentrifuged drop showed organisms and pus cells in plenty. On culture it grew *B. coli.* On March 6th her urine contained about 148,000,000 organisms per c.cm., and mandelic acid treatment was started. On March 9th she stated that she had felt better for the past two days, her back was not so bad, but she had some buzzing in her head. Her urine was clearer, showed only an occasional pus cell in the uncentrifuged drop, and on culture contained only 48 typical and some 800 atypical *B. coli* per c.cm. On March 13th she felt much better, had had no pain in the back for the past two days, and on culture of her urine no typical colonies of *B. coli* were seen. By March 16th, ten days after the treatment was started, she was up and walking about. She felt very well apart from a dragging sensation in her back when she was up (she had been in bed for seven weeks). Her urine was clear but contained a trace of albumin. No pus cells or organisms were seen in a centrifuged drop and there was no growth on culture. She was sent home and on April 3rd, without any further treatment (after March 18th), her urine was still sterile and she felt very fit.

(Her urine contained a trace of albumin on admission. During the first week of treatment this disappeared, but on getting up a trace of albumin rea[illegible] for a short time. It seems unlikely that the albuminuria was due to the mandelic acid.)

Conclusions

An attempt to discover a therapeutic agent that might replace the ketogenic diet in the treatment of urinary infections has led to the clinical trial of mandelic acid.

Mandelic acid appears to be effective in cases of urinary infection unassociated with urinary obstruction, and it is hoped that a more widespread trial of the acid may confirm the favourable impression gained from the present short series of cases.

It is a pleasure to acknowledge my indebtedness to Prof. C. R. Harington and to thank him for his invaluable help and advice throughout the course of this work. My thanks are also due to Miss G. H. Dodds of the obstetric unit, University College Hospital, to those physicians who have kindly permitted me to treat cases under their care, and to Prof. C. C. Okell, in whose laboratory the bacteriological investigation was carried out.

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ONE HUNDRED CASES OF
CHRONIC ARTHRITIS TREATED BY GOLD

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IN their report[1] on the causation and treatment of arthritis and allied conditions, the British Medical Association committee say of the use of gold: "Gold preparations given by intramuscular injection have been used abroad for the treatment of arthritis, but beneficial results have not been confirmed." This statement probably has reference to the work of Umber's[2] clinic, where Solganal was used in 250 cases of infective polyarthritis; to Forestier's[3] first publication in THE LANCET, where he described the effects of Allochrysine in 48 cases of rheumatoid arthritis; to the work of Slot and others,[4] who have treated 14 cases of arthritis by solganal; and, finally, to another report by Forestier,[5] who records results in 500 cases of arthritis, using various preparations of gold. In all these communications good results and even cures are reported.

The present paper sets out the results of five years' work with three preparations of gold in the treatment of 100 cases of chronic arthritis. The actual number treated in this way is much larger, but complete records and the possibility of inspection were only available in something over 100 patients, the others being seen and dealt with as out-patients only.

THE INVESTIGATION

Selection of cases.—The term chronic arthritis is used in preference to anything more exact because, as Table II. shows, the types of joint lesion varied widely; but, so far as is known, no arthritis of specific ætiology is included—a matter of difficulty in some cases of Neisserian infection, where the resemblance to rheumatoid arthritis is often close. Otherwise no particular selection has been made, although the rheumatoid group tends to predominate; the aim being to test the effect of this treatment in as wide a range of arthritics as possible. Cases of spondylitis have not been included; nor has the sedimentation test, as suggested by Forestier, been always employed as a test of infection.

Preparations of gold used.—Three types of gold salts have been used, and most of the cases have had one course of six or more injections only, although a few have had a second or a third course at intervals of three months. In the earlier cases we used sodium aurothiopropanol sulphonate (Allochrysine: metallic gold, about 35 per cent.) in doses of 1·5 to 2·0 g., given either intramuscularly or intravenously in six doses, one a week. Later sodium gold thiosulphate (Crisalbine: metallic gold about 37 per cent.) was given in doses of 1·5 to 3·0 g. intravenously in six doses. Most recently sodium gold thiomalate (Myocrisine: metallic gold about 50 per cent.) has been employed. Up to 2·0 g. is given intramuscularly in oily suspension in graduated doses over a period of six weeks or more.

Toxicity.—There is no doubt that all these preparations of gold can give rise to toxic manifestations; and the recent observations of Holmes[6] is one with which most workers with gold will agree. From my own series I would say that whilst few patients escape without any toxic signs or symptoms, in the great majority they are slight; nor do they appear to do any better because they have been poisoned, although they like to think so. In order of frequency, I would rank these phenomena as follows:—

(1) Pyrexia and increased periarticular pain or swelling.

(2) Rashes of all kinds; macular and scarlatiniform being most common. One of my earliest cases with allochrysine was sent in good faith, as a case of measles, to a fever hospital—and accepted. All these rashes have the common features of marked irritation and desquamation, and are sometimes accompanied by so much œdema as to render the patient unrecognisable.

(3) Sore tongue, stomatitis, and diarrhœa.

(4) The appearance of what look and feel like chilblains in the fingers.

The dose or type of gold used does not seem to bear any relation to the toxic appearances, which come both early and late; some measure of control may, perhaps, be obtained by using Hepatex or Contramine, and lately I have been trying gold dissolved in calcium gluconate for intravenous use.

Arthritics who, on preliminary investigation, show albuminuria, raised blood-urea, poor clearances, or any evidence of liver defect, are not suitable for chrysotherapy; and in those who exhibit toxic features a halt should be called at once. A poor lævulose tolerance does not seem to be necessarily a contraindication, and even in cases to which gold has been mildly toxic I have gone on with the treatment without any increase in the poisoning as shown either by signs or biochemical estimations. On the other hand, emaciated arthritics of the depletive type often show a remarkable general, as opposed to an articular, response to gold; and I have been struck in not a few cases of this type by the increase in weight, well-being, and even number of red blood-cells which was shown—long before the arthritis appeared to be in any way affected.

Adjuvant treatment.—In many of the more chronic cases, all known types of treatment for arthritis had already been tried without success; and whilst, as Table II. shows, response to gold is roughly in inverse proportion to the duration of the lesion, a considerable number of these chronic cases exhibited in no uncertain manner the striking superiority of this to any previous method of therapy.

Along with gold, the following measures have usually been employed—so commonly and so much as a routine as to discount the probability of betterment being due to their agency alone. In the obese, the diet was reduced in calories and carbohydrate, the former roughly to 1000 calories per diem ; in the more usual type of rather under-weight patients, a full diet rich in vitamins A and D was given, but with carbohydrate-restriction in those showing a diminished glucose tolerance. If hydrochloric acid was absent from, or diminished in, the gastric juice 0·4 per cent. acid was given by mouth generously. When the course of gold has been completed, massage, diathermy, and both active and passive movements have usually been started ; whilst, finally, if effusions were large and recurrent, they have been aspirated, and, wherever possible, deformities such as obstinate knee flexion have been treated by firm splinting.

RESULTS

The results are shown in Tables I. and II. On examination the records in these 100 cases did not, I felt, warrant any further analyses beyond these : no particular relationships as to improvement or otherwise were found to exist ; for instance, in those cases which did or did not exhibit diminished glucose tolerance, achlorhydria, or focal sepsis. It is natural enough perhaps that no osteo-arthritics were cured, but the improvement that some of them showed was remarkable. Such factors as age, both of patient and disease, are inevitably to be related to the result and, in this series, the progressive resistance is even enough.

TABLE I

Years after gold treatment.	Total cases.	Cured.	Very much imp.	Imp.	I.S.Q.
5 years	3	1	1	—	1
4 ,, ...	18	3	3	4	8
3 ,, ...	18	2	9	5	2
2 and less ..	61	6	25	29	1

Cured, 12 per cent.; very much improved (imp.), 38 per cent ; improved, 38 per cent.; in statu quo (I.S.Q.) 12 per cent.

TABLE II

Analysis of cases.	Cured.	Very much imp.	Imp.	I.S.Q.
Average age at beginning of treatment	32	49	45	56
Number of men ..	6	5	14	9
,, women ..	6	33	24	3
Average duration of arthritis (years) ..	1·58	5	5·18	7
Clinical type of arthritis—				
Osteo-arthritis ..	—	4	9	4
Rheumatoid	12	27	22	8
Menopausal	—	5	7	—
Gold used—				
Allochrysine	4	6	4	7
Crisalbin	6	16	25	5
Myocrisine	2	16	9	—

The results have been classified as " cured," meaning that both symptoms and signs of disease have gone ; " very much improved," meaning that symptoms have gone although some signs remain ; " improved," meaning that both symptoms and signs remain, but to a lesser extent in one or the other or both ; and as those which remain in statu quo antequam. None appear to have been made worse.

SUMMARY

(1) 100 cases of chronic arthritis have been treated with three preparations of gold and watched over a number of years. (2) The preparations of gold have all proved to be toxic to some patients. (3) The adjuvant treatment has been standardised. (4) Twelve cases have been cured, 38 very much improved, and 38 improved. Twelve remain the same.

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STUDY OF A CASE OF IDIOPATHIC HYPOPROTEINÆMIA

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THE following case is reported because we believe it to be representative of an uncommon, but nevertheless definite clinical condition, the further study of which may throw some light on the site of formation of the blood proteins.

THE CASE AND ITS INVESTIGATIONS

The patient, aged 20, employed as an engineer's apprentice, was admitted to St. Thomas's Hospital in May, 1934, complaining of swelling of his face and ankles of about six months' duration.

This swelling had come on insidiously, reaching its maximum in about a month and varying somewhat in intensity subsequently. On rising in the morning it was most marked in the face, particularly the eyelids, which could sometimes scarcely be opened. During the day this subsided, to give place in the evening to considerable swelling of the feet, ankles, and shins.

Apart from occasional nocturia, present since childhood, there were no other symptoms. His general health and activity were unimpaired, and the exercise tolerance was good. Diet and appetite were entirely normal and there was no history of digestive disturbance. He had had scarlet fever 11 years previously without complications. There was no family history of a like condition, nor of cardiovascular or renal disease.

On admission he was found to be rather pale, but of normal muscular and skeletal development. There was generalised pitting œdema of the lower limbs extending up to the dorso-lumbar region. No other abnormal physical signs were discovered. Blood pressure was 94–110 mm. Hg systolic and 64–70 mm. diastolic. The urine on repeated examination never contained any albumin, red cells, or casts. The blood contained 5·6 million red cells per c.mm., with 107 per cent. hæmoglobin. The differential white count was normal, but with a total of 10,500 cells per c.mm. The teeth and tonsils were perfectly healthy. The Wassermann reaction was negative. The optic fundi were normal. The sella turcica as seen by radiography appeared of normal size and shape.

Tests for renal function gave the following figures which could not be considered to fall outside the normal limits of variation : A maximum urea clearance of 70 per cent. of the average normal figure, a creatinine clearance of 125 c.cm. per minute, and the elimination of 860 c.cm. of urine in the four hours following the ingestion of a litre of water, the specific gravity falling to 1003.

The resting gastric juice contained 0·2 per cent. of free HCl and 0·042 per cent. of combined, a total of HCl of 0·24 per cent. which rose to 0·30 half an hour after 0·5 mg. of histamine.

During his stay in hospital the intensity of the œdema varied spontaneously and considerably, his body-weight swinging between 10 and 11 st., often varying 4 or 5 lb. n the course of a few days without obvious cause.

The picture is one of a youth of good general health and physique, suffering from a generalised œdema due to none of the more usual causes of this condition. There was no evidence of renal damage, cardiac failure, undernutrition, or anæmia. The immediate exciting cause of the œdema was, however, found in the plasma protein concentration, the following low figures being obtained :—

Total protein	4·64 g. per 100 c.cm.	(6·4 to 8·0)
Albumin	3·13 ,, ,,	(3·8 to 5·2)
Globulin	1·51 ,, ,,	(2·2 to 3·5)
Albumin-globulin ratio	2·1 ,, ,,	(1·4 to 2·2)

(The figures in parentheses are the normal limits of variation for each fraction.)

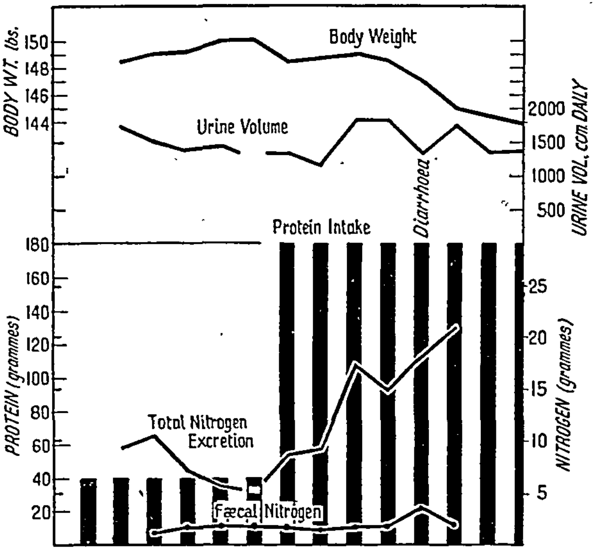
It is in the lack of any demonstrable cause for this low plasma protein concentration that we consider the interest of the case lies. Such a low protein concentration must presumably be due either to excessive loss of protein from the blood stream, to inadequate formation, or possibly to an abnormal setting of the mechanism regulating blood concentration. There was no evidence of excessive loss in this case. Moreover, in cases of hypoproteinæmia due to protein loss, the reduction usually occurs mainly, and often entirely, in the albumin fraction, producing a reduction in the albumin-globulin ratio. In the present case, however, both fractions are equally reduced, the albumin-globulin ratio remaining within normal limits. The possibility that unduly rapid breakdown of plasma proteins was occurring could not be excluded, but was considered to be improbable. It had to be concluded therefore that the primary fault lay in an inadequate formation of these proteins, either because of a deficiency of one of the substances necessary for their formation or because of some abnormality in the mechanism controlling their concentration.

That such causes of low plasma protein concentrations do exist is now recognised, but they are apparently very rarely encountered in such an uncomplicated form. In the œdematous types of nephritis, for instance, loss of protein in the urine is frequently inadequate to account for the low protein concentrations in the plasma, the conclusion appearing inevitable that in such cases plasma protein formation is impaired. The hypoproteinæmia found in conditions of malnutrition, especially when protein intake is low, and in severe wasting diseases, is also referable presumably to inadequate formation, but such possible causes were not recognisable in the present case.

That there was no lack of ability to absorb food protein normally from the alimentary canal was indicated by the following experiment (see Figure).

The patient was kept in bed, and was put on a diet containing only 40 g. of protein and 4·6 g. of salt and having a calorie value of 2500. At the end of six days the protein content of the diet was increased to 178·5 g., the calorie value and chloride content remaining as before. This diet was continued for a further period of six days. During the whole of this 12-day experiment the stools were collected daily and analysed for total nitrogen, and the mixed daily urine excreted was analysed for total nitrogen, creatinine, urea, uric acid, chlorides, the inorganic, ethereal and neutral sulphates, and occasionally for phenols and amino-acids. The curves of excretion of all these substances were quite normal and are therefore not shown here. The nitrogen content of the stools remained at about 1·7 g. per day, being quite independent of the amount of protein in the diet. On one day when the giving of a purgative evoked a diarrhœa a temporary increase was recorded.

Thus no abnormal amount of protein was being lost in the stools. There was on the low protein diet a small negative balance of protein, and on the high a considerable positive retention of nitrogen, but in spite of this there was no significant change in the plasma protein concentration. Body-weight rose slightly on the low protein diet, to fall once again on the high, but the change was scarcely large enough to be significant, and the fall was not maintained. The experiment provides evidence that protein storage readily took place, and that in its gross aspects at least the metabolism of exogenous protein was not abnormal.



Daily nitrogen excretion on low and high protein intakes.

Further evidence of the normal exogenous protein metabolism is provided by an observation made on the day of transition from a low to a high protein diet. On this day the opportunity was taken to determine the specific dynamic action of protein on the metabolic rate. The data obtained were regarded as quite normal, and as further contributory evidence that the intermediate metabolism of exogenous protein was not seriously disturbed.

8.40 A.M.	Resting metabolic rate ..	28·7 cal/sq.m/hour.
9.25 A.M.	,, ,, ,, ..	30·2 ,, ,,
10.0 A.M.	Meal containing 170 g. of mixed protein.	
1.0 P.M.	Resting metabolic rate ..	35·2 cal/sq.m/hour.
2.45 P.M.	,, ,, ,, ..	35·6 ,, ,,

There was thus no reason to suppose that the body was suffering from an inadequate supply of protein metabolites, and this view was further strengthened by the fact that whilst in hospital and again after leaving, the patient was for several weeks on a diet containing large amounts of protein (meat or liver) without this causing any alleviation of the œdema or rise in the plasma protein concentration (see Table).

Date in 1934 ..	June 8	18	24	Aug. 4	Sept. 17
Diet	Low protein.	High protein.	Whole liver.	Normal	Normal
Total protein (g. %)	4·58	4·56	4·26	3·70	4·10
Albumin (g. %) ..	2·90	2·67	2·76	1·94	2·50
Globulin (g. %) ..	1·69	1·89	1·51	1·77	1·64
Alb.-glob. ratio ..	1·71	1·41	1·83	1·09	1·52
Fibrinogen (g. %) ..	0·45	0·80	0·66	—	—
Non-protein nitrogen	23·0	40·0	44·0	37·0	35·0
Urea	25·0	56·0	—	—	—
Uric acid	3·0	2·7	3·3	—	—
Calcium	10·1	8·8	8·9	—	—
Phosphorus ..	4·1	5·0	3·5	—	—

It appeared necessary to conclude therefore that the fault lay in those tissues responsible for the formation of the plasma proteins or for the regulation of their concentration.

Because of our almost complete lack of knowledge of the site and mode of action of these tissues, it was not easy to proceed further with the investigation of this case. Several possible sites of formation have been suggested. Among these are the liver, the bone-marrow, the reticulo-endothelial system, and the intestinal mucosa.

Clinically there was no reason to suspect the liver. The fibrinogen fraction of the plasma protein, for the hepatic origin of which there is considerable evidence, was above rather than below the normal. And a lævulose-tolerance test showed a rise of blood-sugar of less than 20 mg. after 50 g. of lævulose.

No biopsy was performed, so that the state of the bone-marrow is not known; but radiograms furnished no evidence of any lesion involving the marrow, and the normal blood count indicated a normally functioning hæmopoietic system. The condition of the intestinal mucosa and of the reticulo-endothelial system could not be investigated.

DISCUSSION

From the investigations which have been carried out we draw the conclusion that the hypoproteinæmia present in this case, and presumably responsible for the œdema, is not due to any of the generally recognised causes of this condition, but is due solely to a deficient production of the plasma proteins. It seems justifiable to describe the condition as one of idiopathic hypoproteinæmia.

Christian, in a recent review of the causes of œdema, mentions deficient plasma protein formation as a possible cause, but makes no reference to definite cases of the condition, except in malnutrition or occasionally from myelomatous involvement of the bone-marrow.

We have been able to find on record only one other clear case of this idiopathic condition. This was reported in 1933 by Myers and Taylor of Boston. The description of their patient, an Irishman of 51 years, agrees in all essential features with that of our own. The plasma proteins were persistently low, usually below 4·0 per cent., the deficiency affecting almost equally the globulin and albumin fractions. There was the same lack of abnormal clinical findings, of evidence of abnormal protein metabolism, and of response to treatment by high protein diet or in other ways.

Another case of apparently similar type, but complicated by Graves's disease and persistent diarrhœa, has been reported by Mussio-Fournier, *Castiglioni, and Anido*. This was a woman of 38, with extensive œdema and a total plasma protein of 4·27 per 100 c.cm., with an albumin-globulin ratio of 2·3. But it seems possible that in this case enteritis was an ætiological factor, although the authors state that no cause was found for the low plasma proteins and œdema.

A few other cases which may possibly be of the same type have been reported in Germany. In 1922 Jungmann described a man of 28, suffering from weakness and œdema, with plasma proteins varying between 3·9 and 5·0 per cent., no cause being discovered for the low values. Meyer-Bisch also, in 1925, reported having seen three cases of œdema without albuminuria or anæmia, but with low plasma proteins, in one case only 3·4 per cent.

Common to the cases of Meyer-Bisch, of Mussio-Fournier, and of Jungmann was an achlorhydria gastrica. Myers and Taylor also reported absence of free acid from the resting juice in their case, although after histamine the acid content was normal. In our own case the gastric acidity was not abnormal. But in view of the evidence suggestive of association of idiopathic hypoproteinæmia with abnormal gastric function, an attempt was made to improve the condition of our patient with doses of Pepsac, in the hope that it would yield in a way analogous to that of pernicious anæmia. No success was obtained, the hypoproteinæmia remaining as unresponsive to this as to the high protein and whole liver régimes.

We consider it probable, however, that in such cases as this there is lacking one of the factors responsible for the formation of plasma proteins or for the control of their concentration, and it is for this reason that we believe the case to be of interest, for such a condition is seldom encountered in such an apparently uncomplicated form.

SUMMARY

A case is described of generalised œdema in an otherwise healthy man, due to low plasma protein concentration for which no cause has been found. Other apparently similar cases have been collected from the literature.

ADDENDUM

When last seen on April 10th, 1935, this youth was *still at work, but still had his œdema and hypo*proteinæmia with 4·4 per cent. total protein and albumin-globulin ratio of 1·38.

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TECHNIQUE OF EVIPAN ANÆSTHESIA

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THE value of Evipan as an anæsthetic is now well established, and it is in constant use in many hospitals. Some surgeons have enlarged its scope to include almost every surgical operation except prolonged intracranial procedures, while others use it for minor operations only. In dentistry it is now a well-tried and satisfactory anæsthetic. I have also found in spinal anæsthesia that the vomiting and restlessness which disturb in upper abdominal operations cease with 2–3 c.cm. of intravenous evipan.

The anæsthesia is, however, often marred by faulty intravenous technique. I have often seen numerous punctures made owing to the vein not being found, or the needle slipping out either from the patient's movements or inattention on the part of the injector. The result is that at the end of the operation there is much hæmatoma in front of the elbow and some evipan in the tissues, and the patient complains of pain in this region afterwards. More important still, the cubital veins may all be used up and obscured by hæmatoma and the surgeon asking for a little more anæsthesia at the end of the operation which the anæsthetist is not able to give. It is possible, too, that the normal work of the anæsthetist does not include much intravenous work, and they have not the facility in this direction which comes from constant practice. It is in order to eliminate all the risks of failure that I put forward the following details of technique which, if followed, will make for the smooth working so necessary in any new method of anæsthesia.

The arm is first of all fixed upon the aluminium splint shown in Fig. 1. The splint was made to my design by Down Bros., it is padded with Dunlopillo, and the upper strap is a pneumatic armlet with a simple stud system of fixing instead of the rather troublesome method employed in most blood-pressure machines. The armlet is inflated at once before mixing the evipan solution, so as to give the veins time to swell before injecting. If a difficult injection is anticipated because of fat or other cause, then a hot-water bottle is laid over the front of the elbow to increase the dilatation of the veins and the patient is instructed to clench the fist rhythmically. The skin is painted with spirit, not iodine, as this latter might rob one of the help that the blue line of the vein gives in some cases.

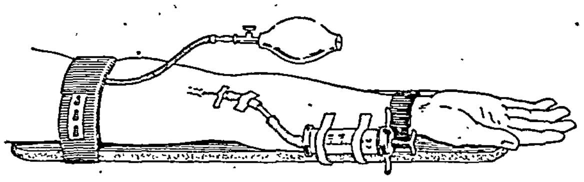

FIG. 1.—Method of fixing arm for simple evipan injection.

The evipan syringe is of 10 c.cm. capacity except when a prolonged anæsthesia is expected, when a 20 c.cm. syringe is used. The needle is connected to the syringe by six inches of thin rubber tubing, and it is a good plan to have a small glass tube included in this to see the blood flow, but this is by no means necessary as the sensation of going into a vein with a sharp needle is unmistakable. As soon as the needle is in the vein the armlet is deflated and the injection commenced. When the first cubic centimetre has been introduced without causing any pain or bleb at the point of the needle, the latter is fixed to the skin by two small strips of adhesive, and the syringe is laid in the groove between the splint and the arm and fixed with a strip of adhesive in such a way that the calibrations can be seen easily. Now with the patient's arm immobilised and the needle independent of the syringe no fear of dislodgment need cause worry. A nurse can be deputed to hold the arm and inject a cubic centimetre as requested by the anæsthetist, who sits by the patient's head while induction is in progress.

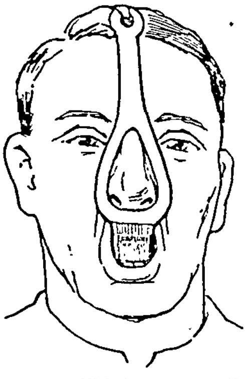

FIG. 2—This type of mouth prop presses the lower incisors forward.

The maintenance of the airways in the anæsthetised patient is best ensured by the type of support shown in Fig. 2, which is very practical and reliable and absolutely prevents the jaw from falling backwards. The usual short aluminium airway put between the teeth does not prevent this, and after all it is surely better for the patient to breathe through his nose even while under anæsthesia. Moreover, the pushing of the angles of the jaw forward is often done with unwarranted force, and there is some reason for regarding this trauma as the cause of post-operative parotitis.

For long operations under evipan anæsthesia I have used the following method (Fig. 3). The arm is fixed in the splint as before, and an intravenous drip saline is given into one of the cubital veins. The indiarubber tubing, 6 inches from the intravenous needle, is punctured by the evipan needle, and this time the syringe is directly connected with the needle and laid in the groove beside the arm as before. The evipan can now be injected directly into the intravenous stream as desired, and a sustained anæsthesia kept up for any length of time; for instance, in a recent case of laminectomy for 2½ hours (27 c.cm. of 10 per cent. evipan). Should the patient require the constant intravenous drip after the operation for shock, uræmia, or other cause, then the arm can be left on the splint, and any restoratives or sedatives can be injected by puncturing the intravenous rubber tube.

The intravenous splint is also of great value in uroselectan injections, blood transfusions (donor and recipient), novarsenobenzol injections, and all forms of intravenous treatment.

There is no detail of the technique so important as the sharpening of the needle which is done as shown in Fig. 4.

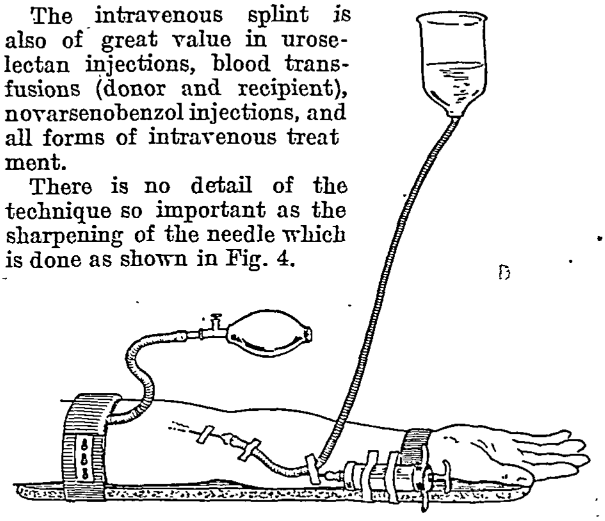

FIG. 3.—Method for prolonged administrations. A sight drip should be inserted in the tube leading from the reservoir.

The needle is inserted obliquely through a cork so that the bevel appears on the rounded surface of the cork. Then a special needle hone of Arkansas stone is drawn lightly across the bevel till the whole ring of the bevel glistens. Then the needle is pushed further through the cork, and the edges lightly stroked with the needle stone to remove any feathering of the edges which may be present. Finally, the needle is removed from the cork and drawn lightly over the finger to be sure that there is no "crochet hook" at the tip of the needle, and if this is present, it is smoothed off with the stone. With such treatment a perfect point is assured and this makes injection infinitely easier.

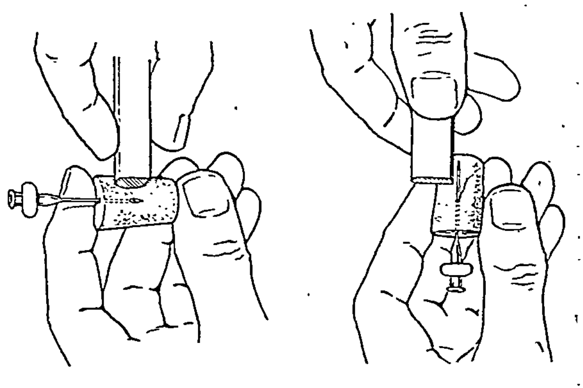

FIG. 4—Method of sharpening needle by hone.

If the usual needle taken at random in the theatre or ward is inspected with a magnifying glass and compared with a sharpened needle the necessity for honing the needle is made very clear.

MANCHESTER AND SALFORD HOSPITAL SATURDAY FUND.—An increase in income of £14,000 is reported by this fund, which has raised £601,313 in 28 years.

CLINICAL AND LABORATORY NOTES

FATAL ENTERITIS DUE TO SALMONELLA ORANIENBURG

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Cases of food poisoning in this country are due usually to *Salmonella typhimurium* (*Bacillus aertrycke*); thus in a recent paper Smith[1] mentions that of 60 outbreaks in the north-east of Scotland it was responsible for 35. Less often the condition is caused by *B. enteritidis*, while from time to time sporadic cases occur in which the infective agent is a rarer member of the group. With many of the types, infection in this country has not so far been reported, and it is thought that the following case of fatal enteritis which occurred in Bury and which was traced to the Oranienburg strain of salmonella (Kauffmann[2,3]) is worthy of record, since hitherto this organism has not been met with in Great Britain. The case was sporadic and the source of infection is unknown.

Mrs. A. was admitted to the Florence Nightingale Hospital, Bury, on Oct. 27th, 1934, as a suspected case of typhoid fever. The illness commenced on Oct. 2nd with shivering, vomiting, and headache;, at first there was no abdominal pain or tenderness, but slight tenderness developed during the second week of illness. The Widal reaction on Oct. 25th was as follows:—

B. typhosus	(H)	.. nil	*S. paratyph.* B (O)	.. nil
,, ,,	(O)	.. nil	*Br. abortus* ..	.. nil
S. paratyph. A	(H)	.. nil	*Salmonella group*	.. 1/160
,, ,, B	(H)	.. nil	*Culture of clot* ..	negative

Diarrhœa had begun the day before taking of the blood sample, three weeks after the onset of the illness.

On admission to hospital the temperature was 100° F. and the pulse-rate 104. General condition was fair: tongue thickly coated, reddened throat, small tonsils, and the soft palate and fauces covered with sticky mucus. Heart and lungs normal; slight cough. Nervous system normal. No abdominal distension. Slight tenderness over splenic area but no enlargement of the spleen could be detected. Nil abnormal in urine, stools three or four per day, pea-soup in appearance.

The temperature fell gradually to 97° F. and the pulse-rate to 84. Cough became gradually worse and the sputum was thick and tenacious, looking somewhat like broken-down lung tissue. No tubercle bacilli were found, and while in film numerous pneumococci were present, no cultures were made. The patient's general state gradually grew worse with general loss of flesh.

On Nov. 15th there was a sudden rise of temperature to 102·6° F. with a pulse-rate of 124. The patient vomited and became dyspnœic, complaining of abdominal discomfort, but no great pain or tenderness in the abdomen was noted. On Nov. 17th the temperature had once more fallen to 97° F. Weakness was very marked and death occurred on the 21st.

Post-mortem findings.—Heart: small, muscle very flabby; no valvular or arterial disease. Lungs: hypostatic congestion of base of right lung; no evidence of tuberculosis or new growth. Liver: large and pale; gall-bladder very distended and full of bile; no gall-stones. Kidneys: normal. Suprarenals: normal. Intestines: small intestine showed patches, a foot and more in length, of inflammation and minute hæmorrhages, especially in the ileum.

Bacteriology.—Specimens of blood and fæces were again received at the laboratory on Nov. 2nd. The Widal reaction was now completely negative, no agglutination of the group salmonella being detected. The blood clot was incubated in 0·5 per cent. sodium taurocholate, and after three days' incubation growth was obtained of a salmonella organism similar to that isolated from the fæces. Direct plating of the fæces gave negative results, but from growth in 1/200,000 brilliant-green broth a pure culture of a salmonella was obtained. The organisms isolated gave the general characters of the group, being actively mobile and fermenting (with the production of acid and gas), glucose, mannite, dulcite, maltose, xylose and arabinose. Lactose, saccharose, and inosite were not fermented. Hydrogen sulphide was produced, and after a preliminary acidity in litmus milk the reaction became markedly alkaline. Indol was not formed. No agglutination was obtained with the following H sera: *S. paratyphosus* B, *S. typhimurium*, the Newport strain, *S. enteritidis*, *S. suipestifer* (European), and *S. paratyphosus* C, and the organism was submitted to Dr. Smith for typing, who reported it as *S. oranienburg*.

At the post-mortem examination a specimen of bile and a portion of the ileum were taken for examination and from both of them this organism was isolated in pure culture. On section of the ileum the mucosa showed necrosis, the blood-vessels of the submucosa were congested, and small groups of mononuclear cells were present in the submucous and muscular coats.

NOTE BY DR. SMITH

The serological examination of the strain showed that it agglutinated with the O serum for the paratyphoid C sub-group of the salmonella genus to a titre of 1/1600, and failed to agglutinate with any of the other O sera. An absorption test showed that it could completely remove the agglutinins from this serum. When tested against the H sera of the sub-group, it was agglutinated by the serum for the Oranienburg strain only, and that to full titre 1/25,000. Again, an absorption test showed that it could remove all the agglutinins. The antigenic structure of the organism is therefore represented by the formula VI, VII: mt., which corresponds to that of *S. oranienburg*.

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[1] Smith, J.: Jour. of Hyg., 1934, xxxiv., 351.
[2] Kauffmann, F.: Zeits. f. Hyg. u. Infektionskr., 1930, cx., 537, and 1931, cxi., 221.
[3] Report of Salmonella Subcommittee, Jour. of Hyg., 1934, xxxiv., 333.

CRURAL PARESIS ACCOMPANYING HERPES ZOSTER

By G. P. Chandler, M.D. Camb., M.R.C.P. Lond.

A crural paresis associated with an attack of herpes zoster appears to be a rare event. Worster-Drought and McMenemy[1] were only able to find records of two cases in their review of the subject. But recent researches in France by Lhermitte and Nicolas,[2] Lhermitte and Vermès,[3] and Faure Beaulieu and Lhermitte[4] suggest that some paralysis may occasionally be expected to accompany this disease.

These workers have shown that the morbid process in herpes zoster is much less localised than is often thought. There is an inflammatory reaction extending from the posterior root ganglion, involving the posterior root, the surrounding meninges, and the grey matter of the posterior horn, spreading in some cases to the pars intermedia and anterior horn of grey matter and passing up and down the cord for a variable distance. The microscopic changes consist of degeneration and vacuolation of the affected nerve-cells, with lymphocytic infiltration, vascular dilatation and hæmorrhage, the vascular changes being most conspicuous in elderly patients with poor arteries. The meninges show vascular dilatation and there is hyperplasia of the capsule of the affected posterior root ganglion. Shrinkage of the grey matter of the posterior horn may be obvious to the naked eye.

This conception of the pathology of the disease as a myelitis rather than a local inflammation in the posterior root ganglion suggests that a varying degree of paralysis may be not uncommon during an attack of herpes zoster. The occurrence of ocular palsies associated with herpes ophthalmica is not very rare. Other types of paralysis affecting the face, neck, arm, or abdominal muscles have been recorded by Hunt,[5] Masten,[6] Worster-Drought,[7] and others.

DESCRIPTION OF CASE

The patient was a gardener aged 60. He had always enjoyed good health, except for occasional colds and an attack of sciatica in the right leg twenty years ago. He was seen on Oct. 25th, 1934, with a two days' history of severe pain in the right leg. The pain was continuous but varied in intensity and appeared to be worse at night. It was described as being of a boring or gripping character unaltered by movement or rest. There was no disturbance of micturition or defæcation.

On examination he was a thin wiry man with dilated venules on the face. Temp. 98·6° F. (A.M.); pulse-rate 68. Heart not enlarged, sounds distant, arteries hard and rather tortuous. Blood pressure 160/90. The lungs, abdomen, and urine were all normal. All the cranial nerves and the fundus oculi were normal. There was slight weakness of the right triceps muscle. The abdominal reflexes were present. The right leg showed absent knee- and ankle-jerks and the plantar reflex was flexor. There was diminished power in the quadriceps, hamstrings, and calf muscles, but no obvious wasting. There was diminished sensation to pin-prick and cotton-wool on the anterior and outer part of the leg from the knee to the middle of the calf, and diminished vibration sense in the right tibia. Joint sense was normal. The left leg showed no abnormality. Romberg's sign was not present. The Wassermann reaction was negative.

Two days later a herpetic rash appeared on the anterior aspect of the right knee and on the anterior and outer aspect of the upper third of the leg below the knee. The rash pursued its usual course leaving a slight scarring. By Nov. 12th the pain in the leg was much less severe, and the rash was drying up. The patient complained of weakness in the right leg and a tendency for the right knee to give way under him when he got out of bed. There was considerable weakness of the right quadriceps and hamstring muscles and some wasting of the thigh. The right ankle-jerk was just present, the knee-jerk was still absent. No alteration in the other reflexes or in the area of analgesia.

On Dec. 12th the patient said he had returned to light work two days ago. He said that the right leg was still distinctly weaker than the left, but he was able to get around the garden. He still complained of a dull aching pain in his thigh. The power in the quadriceps and hamstring muscles of the right leg had much improved. The ankle-jerk was present but sluggish, the knee-jerk was still absent. There was no alteration in the area of analgesia. Examination of the cerebro-spinal fluid showed a trace of globulin and 0·025 per cent. of albumin. The fluid was clear in appearance and under normal pressure. The Wassermann reaction was negative.

On Jan. 25th, 1935, the patient felt well, he had lost his pain, and could walk and do his work almost as well as formerly, but the right leg still felt weaker than the left. Sluggish knee- and ankle-jerks on the right side were both obtained on reinforcement. There was still some weakness of the right hamstrings and the area of analgesia was present but less marked. Vibration sense in the right tibia was absent. On March 2nd the condition appeared to be unaltered.

DISCUSSION

In this case the eruption occurred in part of the distribution of the posterior root of the fifth lumbar nerve; it was accompanied by signs of involvement of the motor-roots of the fourth and fifth lumbar and first sacral nerves. The inflammatory reaction appears to have been of considerable extent in the region of the anterior horn, but localised in the posterior horn to the fifth lumbar segment and affecting the posterior columns to a slight extent.

If the modern view of the pathology of herpes zoster is correct and a myelitis of varying extent exists in every case, it seems probable that some degree of paresis of muscles supplied by the affected segment may occur more frequently than is generally thought, and that occasionally the major damage caused by the inflammatory reaction may fall on the anterior horn cells causing a lower motor neuron paresis affecting muscles supplied by one or more segments of the cord. This may accompany a localised herpetic rash, as in this case.

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PUNCTURE OF INTERNAL JUGULAR VEIN DURING PHRENIC EVULSION *

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The patient was a young man with disease of the right apex and cavitation. A previous attempt at artificial pneumothorax had proved unsuccessful owing to the presence of adhesions. It was decided therefore to perform a right phrenic evulsion under a local anæsthetic, and this was done on March 14th, 1935.

After infiltration with 1·0 per cent. novocain and adrenaline a 2½ in. vertical incision was made along the posterior border of the sternomastoid. All went well, the landmarks being duly defined, till the deep fascia covering the scalenus anticus was reached. In order to expose this more clearly, the assistant, who was standing on the opposite side of the table, was told to retract the sternomastoid. This he did with the blunt hook which he had been given to retract the omohyoid, instead of the broad bladed retractor usually used for the sternomastoid, and there was an immediate gush of dark blood filling the wound. The blunt hook had perforated and torn the internal jugular vein.

The hæmorrhage was at once checked by pressing the vein forward against the sternomastoid, but an attempt to catch the torn point in a pressure forceps only led to further tearing of the vein and more copious bleeding. After some manœuvring and blunt dissection, while the fingers still compressed the vein, two large clips were placed well above and below the tear, including some of the sternomastoid muscles as well as the vein in their grasp; they were closed, but not tightly. On removing the fingers from the torn vein the hæmorrhage was found to be controlled. It was then comparatively easy to free the vein sufficiently to pass an aneurysm needle round it. This was threaded with catgut and withdrawn; the catgut loop was divided, one piece being drawn upwards above the tear and the other downwards below it, and

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* Based on a communication to the section of surgery of the Royal Academy of Medicine in Ireland on March 29th.

both were tied, completely occluding the internal jugular vein above and below the injury. The operation of evulsion was then proceeded with and the wound closed with deep catgut sutures and Michel's clips. The patient fortunately was unaware that there had been any serious accident. Healing was normal and convalescence was uneventful.

Thinking over the case it is easy to see how such an accident occurred, as the assistant from his position was unable to see the internal jugular vein covered as it was by the sternomastoid, though to the operator it was a very prominent feature of the landscape. For safety's sake no hook retractors should be used, only broad ones, and in future operations this practice will be followed. By good fortune a colleague was present in the theatre at the time of the accident and rendered timely assistance both moral and physical.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF EPIDEMIOLOGY AND CHILDREN'S DISEASES

A MEETING of these sections to which members of the Society of Medical Officers of Health were invited, took place on April 26th, with Dr. J. D. ROLLESTON in the chair. The subject discussed was the problems of

Prophylaxis in Pulmonary Tuberculosis

Dr. ARTHUR MACNALTY said that the first step in the prevention of tuberculosis consisted in a recognition of the fact that it was an infective disease. It was formerly a fatal and widespread malady affecting all classes of society. Koch's discovery of the bacillus in 1882 established the disease as an infectious one, and opened the doors to organised research. A notable advance in the production of immunity was made by Calmette and Guérin when they produced the B C G vaccine, though the immunity produced by it was admittedly transient. The human type of the tubercle bacillus was the cause of nearly all cases of pulmonary tuberculosis, while Stanley Griffith's figures gave 5 per cent. of human tuberculosis as of the bovine type. It was recently shown that bovine pulmonary tuberculosis exists in both Scotland and England. The bovine type of bacillus conveyed in milk was mainly responsible for the infection of man through the alimentary tract.

The prevention of bovine tuberculosis could be considered from two standpoints. The first was the control and possible eradication of tuberculosis in herds of cattle, especially dairy cattle. It had been estimated that not less than 40 per cent. of the cows supplying milk in England were infected with tuberculosis, and probably from 1 per cent. to 2 per cent. of them actually yielded tuberculous milk. The second heading was the prevention of the spread of the disease to human beings. Under the first heading much had been done in recent years by tuberculin testing of herds. The Tuberculin committee of the Medical Research Council had devised the double intradermal test, and this had been made compulsory for the testing of certified herds, and had passed into almost universal use. J. B. Buxton and S. Griffith were now investigating, at Cambridge, the efficacy of immunisation of calves by B C G (Calmette's attenuated living vaccine) and other antigens. As to the second category of prevention, the diminution in non-pulmonary tuberculosis was encouraging. In 1919 the deaths from the non-pulmonary form were 10,328, and in 1933 the figure had fallen to 5405. Dr. MacNalty suggested that a part of this improvement was due to a safer milk-supply.

During recent years in the campaign against tuberculosis the State had come to realise that it was not merely a medical disease—one which concerned only the patient and as such received due attention in the consulting-room of the pulmonary specialist. Many factors favoured the spread of the disease, such as occupation, malnutrition, poverty, overcrowding, bad sanitary environment, *contact infection*, and the influence of other diseases. Its social implications were also appreciated. Antituberculosis work was now looked upon as an integral part of preventive medicine. It was important to find not only the early case but also the primary infecting case in a household. Examination of contacts needed greater attention. Often it was not the practitioner's fault if a case were not diagnosed until it was advanced, for, as has been said, "the working man cannot afford to be an early case of tuberculosis." There was still need for the public to be taught the wisdom of seeking advice at early stages of the disease; the Public Health Act, 1925, extended the power of local authorities to educate the public on these matters. The national tuberculosis scheme depended largely on the coöperation of the general practitioner, the first line of defence in prevention. Dr. MacNalty referred to the value of collapse therapy in its various forms and sanocrysin in treatment. The after-care of cases was still a difficulty, but it had been met by Sir Pendrill Varrier-Jones in his pioneer work at Papworth, and by other village settlements for suitable patients. The *mortality from tuberculosis had declined* by 72 per cent. in England and Wales since the 1851–60 decennium, but there still remained much to learn about the prevention of the disease.

MORBID ANATOMY

Dr. CHARLES MILLER dealt with the morbid anatomy of tuberculosis in children. He said he had been collecting and examining post-mortem material from cases of tuberculosis up to the ninth year of age since 1909, and he gave a summary of his findings. The total number of subjects examined was 5259. Of these, 419 were either full-term still-born infants, or did not live longer than 24 hours. Among those 419 there were no instances of tuberculosis. Among the 4840 children who survived 24 hours there were 940 cases of tuberculosis, or 17·8 per cent. Of the 940, 677 were cases of undoubted respiratory infections, as also were probably 14 cases of double infection. 218 cases were alimentary infections, and 21 were primary infections of the common respiratory-alimentary tract (the region between the lips and the epiglottis).

Respiratory infections had been found to be more *active, more progressive and more lethal than alimentary* infections; also these were more likely to cause hæmatogenous dissemination than those of the intestinal tract. No proof was available that human tubercle bacilli were more virulent than bovine; that respiratory invasions were more serious than intestinal ones might be due to anatomical differences and peculiarities. The prevalence of tuberculosis, irrespective of the special path of infection, increased in the first five years of life, after which age it remained fairly constant. Not all caseous and calcareous lesions could be regarded as inactive, though perhaps fibrous lesions could. The importance of the invasion of lymphatic tissue was very great, and in children glandular involvement was nearly always a prominent feature. In fatal cases in children it was difficult to say whether tuberculosis was the chief or only a remote cause of death. Among children in the first year of life the case-mortality-rate from tuberculosis was 81·4 per cent., whereas in the tenth year it was 34·8 per cent. Hæmatogenous dissemination, both general and partial, was most common in respiratory infections, and rarest in alimentary infections.

PREVENTIVE MEASURES

Dr. D. A. Powell said that, for all practical purposes, every case of pulmonary tuberculosis could be regarded as having been derived from some other person, and hence the supreme importance of taking every means of reducing the total amount of tuberculous inoculum at large. These measures he classified as follows: (1) the diagnosis and treatment of cases of pulmonary tuberculosis while still in the closed stage; (2) the search for occult cases; (3) the conversion of known open cases into closed cases by means of treatment, either directly by collapse methods, or indirectly by general sanatorium methods; (4) personal precautions taken by the patient against transfer of his infection to others; (5) measures to disinfect clothing and belongings at home, and the patient's isolation, the latter including segregation in an institution. He considered that segregation was the most logical and expeditious method of attaining the object of limiting the spread of tubercle. Sufficient beds should be available for every patient willing to remain in an institution until he became non-infectious. Patients should be taught the great importance of the means they were able themselves to undertake, and they should be made to understand that chemical disinfection was not so valuable as thorough and regular soap-and-water cleanliness. Until it was possible to sterilise articles which tuberculous patients had used, those articles should be kept moist, so lessening the chance of dried inoculum being suspended in the air and inhaled.

Dr. Gregory Kayne said there still remained important gaps in the knowledge of the causes and the prognosis of the disease. The two means of prevention were avoidance of contact with tuberculous subjects, and raising the resistance of the individual to enable him to deal with such infection as he might acquire. Antituberculosis measures were not so vigorously adopted in respect of children under 5 years old as in older children. When meningitis developed it was as a complication of the recently acquired disease. He considered the prevention of infection under three headings: (1) adequate treatment of the tuberculous person in the household, (2) hygienic measures adopted in the home, (3) removal of the child from its home. The absence of expectoration was not necessarily an indication that the patient was non-contagious. The value of collapse therapy, especially in bilateral cases, could not be over-assessed. Section 62 of the Public Health Act should be used, he thought, for securing segregation of patients. The increasing of the specific resistance by B C G vaccination he regarded as important; he had seen its results in several European centres. Particularly he would like to see a more energetic study carried out on the handling of home contacts.

IMMUNISATION

Dr. Reginald Lightwood spoke of the special danger of miliary dissemination of tubercle in the infant a few weeks only after its original acquisition. So long as there was no sure way of preventing tubercle in the very young, the separation of the infant from its mother must be considered. The Grancher system was carried out to some extent by the London County Council, and also at Hastings. The great obstacle to the Grancher separation system was the natural objection of the mother to parting with her child at this age; it was also costly. Responsible opinion now seemed for the most part agreed that B C G, properly prepared and properly administered, was harmless, and gave partial immunity when given by the mouth; the date of appearance of the immunity and its duration were still uncertain. Wallgren, administering B C G intradermally in Gothenberg, had apparently achieved such a degree of resistance that among 230 vaccinated infants who had returned to their homes, no deaths from tuberculosis had occurred. The infant mortality-rate from tuberculosis had fallen strikingly in Gothenberg since the intradermal method had been adopted. The special points about Wallgren's work were: (1) no infant was selected for immunisation until it was reasonably certain that it had not yet become infected; (2) no infant was deemed to have been effectively immunised until a positive tuberculin test resulted from B C G vaccination; (3) each case was followed up and, at intervals, subjected to clinical and radiological examination. Parenteral vaccination appeared to confer a more complete immunity than did oral methods.

Dr. Robert Carswell said that the usual division of tuberculosis into tuberculous infection, latent tuberculosis, and tuberculous disease was apt to throw too much into the background the common histological basis. It was now recognised that the Koch preparations T R and B E were agents of undoubted immunising value, which sufficed to eliminate slight or incipient tubercle. How far these would contribute to the eradication or control of the more advanced disease only careful clinical and experimental work could show.

Dr. Leonard Findlay emphasised the seriousness of pulmonary tuberculosis in infancy and young childhood. In 1929 the mortality from the disease in children in the first two years of life was only one-fifth of that in 1911, whereas for persons between 25 and 45 years the diminution had been no more than 50 per cent. In the year 1800 Blackmore found, in a large number of autopsies on children, only three cases of healing tubercle, and not one actual healed case. He did not know whether this great liability to the disease in the very young meant that infants were more susceptible to it, or whether it was due to the more intimate contact of the infant with its tuberculous parents and relatives. It was of supreme importance to take all possible measures to prevent infants from becoming infected. Great authorities had proved that immunity could be harmlessly conferred; the time for discussion had gone, and action on a large scale should be taken.

METHODS OF SPREAD

Sir Leonard Rogers said that during his 20 years as pathologist in the largest hospital in India his attention was drawn to the serious contribution which was made by tuberculosis to the total death-rate. In 5000 post-mortem examinations, tuberculosis caused more deaths than did any tropical disease. Fully 17 per cent. of the deaths were recognisably due to tuberculosis. The peculiar method of living of the Hindoo and his habits usually resulted in each tuberculous subject infecting a number of his relatives before he himself succumbed.

Dr. Veitch Clarke regretted that more stress had not been laid on the need of coördinating the results obtained from the measures available for combating the spread of tuberculosis. He did not think the importance of disinfection could be counted in regard to this disease; any l authority which dissociated itself from disinfectant measures was, he considered, neglecting its duty, especially as so many tuberculous subjects were in the poorest stratum of society. The advocacy of the Grancher system did not take sufficient note of the social and domestic side of life. The diminution in the tuberculosis figures in this country was largely due to general measures such as improved housing and diet rather than to specific measures.

Dr. R. C. Jewesbury said that the practical issue was what one ought to do when a mother, who was perhaps tuberculous, brought her infant to the clinic for advice. To separate mother and child was in most cases practically impossible. Artificial immunisation by vaccination, practised in several countries, had been practically ignored in this. Surely the B C G system of inoculation could be given a trial and the results observed. If the child could be protected from the disease at its most vulnerable age, he might be enabled to carry on to an age when he could tide over a more or less benign attack.

Dr. E. Stalkind spoke of the importance of the social and hygienic factors and of early diagnosing in pulmonary tuberculosis.

MEDICO-LEGAL SOCIETY

At a meeting of this society held on Thursday, April 25th, Judge Erengay presided. Dr. Emanuel Miller read a paper on

The Aberrations of Adolescence

Not till the beginning of the nineteenth century, he said, was there any public conscience aroused with regard to the need for the special treatment of juvenile delinquency. The Children's Act of 1908, with the establishment of children's courts, was the essential landmark in the legal history of the subject. Realisation of the special needs of the child arose from the work of Rousseau and the philanthropic movements of the early nineteenth century, and the advances in medicine and psychology in the second half of that century. Dr. Miller's thesis was that the ignorance of disorders of conduct which had no direct legal bearing had contributed to the distorted picture of adolescent crime, wrong diagnosis, and inadequate methods of treatment. To all intents and purpose, in law, offences and charges were dealt with in the same way, whether they were committed by adults or young persons. Their main concern that evening, however, was with the wide group of disorders of adolescence; the nature of such disorders in so far as they were peculiar to a particular period of human development; the extent to which the diagnosis of physiological, psychological, and sociological causes could help medico-legal experts to interpret the law as it stands; and, lastly, the ways in which they could help to reorientate legal opinion towards a more scientific and more humane attitude to human conduct.

The problem of "growing up" was a difficult one. It entailed for its understanding a realisation that in the same way as the first five years of life were a recapitulation of the main features of racial history, so adolescence was a period of recapitulation of many of the emotional problems of the first five years. Adolescence was a period of the temporary breakdown of integration. Four processes were involved in "growing up" from infancy to maturity. First, there was the power of *inhibition*—that is, the capacity to endure an increasing amount of pain born of frustration of instincts, i.e., the power to subordinate the non-integrated impulse life to the demands of reality which were imposed upon the child by adult standards and social usages. Secondly, there was the process of *translation of ego-centricity* in the child, particularly in matters of love, to ego-centrifugal activities which characterised normal human maturity. Thirdly, there was the *sacrifice of dependency* for self-sufficiency. Fourthly, there was the *acquirement of sexual maturity.*

The coming to maturity of the instincts, particularly of the sex instinct, meant the independence of the human organism as a battling, constructive, sexual, and social creature. At puberty there was a certain discordance or lack of coördination in the growth of the various parts of the body, so that unexpected stresses and strains were placed upon certain tissues, particularly because of the sudden call of the sexual glands and the bony and muscular structures. The greatest discordance occurred as between various mental functions—instinctual, emotional, and intellectual. Instinctual functions made demands which could not be met adequately by the moral forces already established with some degree of strength in earlier years. Adolescence presented therefore a picture of instinctual, moral, and intellectual incoördination as well as of concomitant physical disorders. Autoerotism, sadistic, and masochistic manifestations occurred along with moral compulsions; idealism and family devotion with rebelliousness and revolt against authority; and sexual reserve and asceticism alongside delinquencies which were sometimes but feeble disguises of sexual frustrations. Some suicides were explicable only on understanding these mental mechanisms. Examples could be quoted of masochistic exercises ending in death, yet called suicide. Dementia præcox, not as a clinical entity but as a profound regressive phenomenon, was of first importance to the study of adolescence, and manic depression, though rarer, was also an indication of the severity of the moral conflicts of adolescence. Vagrancy, compulsive delinquency, and social stupidity were made clearer in the light of psychopathological concepts which the law could not afford to ignore. The occurrence of precocious adolescence and delayed adolescence showed how difficult it was for the law to deal adequately with young offenders only up to 17 in the children's court. Sentences should be therapeutic and not framed solely according to a legal rule. Justices should know more of the curative aspects of penology; law students should have a working knowledge of psychopathology; and probation officers should have facilities for studying a wider field of disorders than those adolescents who reached the courts. Observation centres were much needed.

Discussion

Dr. Letitia Fairfield said it was necessary to keep the age of the children's courts to 17, as it was undesirable to try young children with the developed young criminals of both sexes. Psychological treatment was only possible with full coöperation of the offender.

Dr. H. R. Oswald said that as many offenders were mentally defective, sterilisation should be seriously considered, or alternately such offenders should be treated like lepers.

Dr. A. Baldie said that the subject of juvenile delinquency went far beyond the confines of mental defect. Many adolescent disorders were the product of vigorous personalities who needed guidance and not segregation.

REVIEWS AND NOTICES OF BOOKS

The Cyclopedia of Medicine

By Various Contributors. Editor-in-Chief: GEORGE MORRIS PIERSOL, B.S., M.D.; Assistant Editor: EDWARD L. BORTZ, A.B., M.D. Philadelphia: F. A. Davis Company. 1934. Twelve volumes, about 1050 pages per volume. $120.

THIS comprehensive work of reference has now been completed by the publication of Vols. X., XI., and XII., and a separate index of over 400 pages. It deals with medicine and surgery and all the specialties, being written by a very large number of experts, mostly from the United States and Canada, but some from Europe and South America. The matter is arranged alphabetically, and is treated both from the practical and academic points of view. The work is ambitiously designed to meet not only the needs of the general practitioner but those of the specialist and the laboratory worker also. The editor sees the gulf between these groups as steadily narrowing with the advance of scientific medicine; it might be argued with equal force that their scope is being differentiated by the growing complexity which this advance brings in its train. Throughout the work the aim is to approach medical problems as far as possible from the bases of pathological physiology, physical chemistry, and biophysics. Some disturbances of function are considered separately—e.g., asphyxia and dyspnœa, and the production of œdema. References to the literature, sometimes very extensive, are given at the end of most of the contributions and abstracts of recent papers are often quoted in the articles. In Vol. X. are included the subjects of pregnancy, psychology, and radiology, the last occupying 400 well-illustrated pages. Vol. XI. contains among other important articles a well-written account of stomach disorders, and Vol. XII. is notable for an authoritative presentation of the subject of thrombo-angiitis obliterans, and a description of pulmonary tuberculosis from all aspects (except that tuberculous empyema does not appear to be adequately considered), including a lucid account of the X ray diagnosis. The good impression made by the earlier parts of the work is maintained.

It is inevitable when experts combine to write on a single or related subjects that some overlapping and some variations on the same theme are to be found, but on the whole readers will not find this a disadvantage in a work which is comprehensive and authoritative. It is proposed in the future to issue supplements to cover all important developments, and it will be interesting to see what changes are selected as worthy of record.

The Rheumatic Diseases

Practitioners' Series. By G. D. KERSLEY, M.D. Cantab., M.R.C.P. Lond., Assistant Physician at Royal United Hospital, Bath. London: William Heinemann (Medical Books) Ltd. 1934. Pp. 88. 6*s*.

THIS little book sets out in a concise straightforward fashion much useful information about the rheumatic diseases. It deals with facts and not with theories and should prove valuable to students and practitioners, although consultants will find interesting information in the chapter on physiotherapy. The opening chapters give an excellent summary of our scanty knowledge of the ætiology of the rheumatic state in children and young adults. Then follows a chapter on rheumatoid arthritis, with a particularly helpful paragraph on treatment. The chapter on fibrositis is one of the best in the book and should be of help to the practitioner in his dealings with this extremely common, painful, and disabling group of conditions. There follow sections on osteo-arthritis, climacteric arthritis, spondylitis, and gout, with an excellent chapter on physiotherapy; a short account is given of the individual British spas. It must be admitted that at most medical schools the attention paid to this important group of diseases is still inadequate to the needs of those who are entering general practice, and the student would be wise to use this short text-book to supplement his teaching.

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1. Ophthalmology in General Practice

By O. GAYER MORGAN. London: John Bale, Sons and Danielsson Ltd. 1935. Pp. 58. 2*s*. 6*d*.

2. Aids to Ophthalmology

Eighth edition. By N. BISHOP HARMAN, M.B. Cantab., F.R.C.S., Consulting Ophthalmic Surgeon, West London Hospital; late Ophthalmologist L.C.C. Education Department. London: Baillière, Tindall, and Cox. 1935. Pp. 242. 3*s*. 6*d*.

1. Mr. Gayer Morgan's useful, well-written, and compact little book deals with conditions frequently recurring in private practice and those less common ones in which early and accurate diagnosis is of vital importance to the eye—the ophthalmic emergencies. Of these emergencies the most important are acute glaucoma and penetrating wounds of the eye, and accordingly the methods of using the focusing lens, the loupe, and the binocular magnifier are carefully described, as well as the conditions which familiarity with these simple aids will enable the general practitioner to diagnose and to treat. For these purposes ophthalmoscopic diagnosis is not required; but modern electric ophthalmoscopes are so easy to use that every practitioner ought to be able to diagnose ordinary fundus appearances and to distinguish the normal from the abnormal. Some of the conditions which he should be able easily to recognise with the help of this book are choked disc, optic atrophy, the conditions of the retinal vessels due to arteriosclerosis when well marked, and detachment of the retina. It is, of course, essential that the practitioner should be able to recognise the first signs of ophthalmia neonatorum and apply the correct treatment. The importance of the early diagnosis of squint in young children is not so generally appreciated. Mr. Morgan's little book should serve as a standby to many who have had no time to include a serviceable knowledge of the eye in their pre- or post-graduate studies.

2. Mr. Harman has succeeded in bringing his little text-book abreast of the times while keeping it so small and cheap as to suit every pocket and purse. Comparing it with earlier editions, we notice that the chapter on eye signs in body diseases gives the student a glimpse into the wider implications of the subject, and one on the incidence and causes of blindness introduces a subject of growing importance. A new chapter on standards of vision for the Services will be found useful for reference. Mr. Harman calls attention to the hæmatologic diagnosis of sympathetic ophthalmia in cases which show an excess of large mononuclear cells, and to the treatment of such patients with salvarsan. The newer operations for detached retina are recorded, and the uses of

slit-lamp are indicated, the author's own hand model being figured. In the chapter on operations Mr. Harman's subconjunctival reefing operation for squint is fully described. The bulk of the book remains as it was, every page containing matter which the student requires to know and nothing superfluous being set down. The number of new illustrations in this edition is 38. It also includes an excellent first guide to the practice of refraction with useful practical hints on the prescribing of glasses. The only slips we have noticed are the attribution of obstruction of the central artery of the retina to embolism alone, and the repetition on p. 183 of a sentence from a previous chapter.

L'année thérapeutique, 1934

By A. Ravina. Paris: Masson et Cie. 1935 Pp. 191. Fr.18.

Dr. Ravina continues to write these attractively produced little volumes. Like last year's annual, this one contains about 80 short accounts of new methods of treatment, based on papers published during the year, mostly in France, but sometimes elsewhere. The accounts are essentially abstracts of the papers, full enough to enable the reader to judge, approximately at least, the evidence on which advocacy of the various procedures is based. The subjects are diverse, ranging from evipan anæsthesia and the use of large doses of iron in hypochromic anæmia, to the treatment of the Vaquez-Osler disease with raw onions, and the plugging of bleeding tooth-sockets with the pectoral muscle of freshly killed pigeons. Only occasionally does Dr. Ravina permit himself a brief, and usually cautious, word of comment, and there is nothing to imply recommendation of the treatments he has chosen for description. He merely answers the question "What is new in the way of treatment?" and leaves his reader to judge what is worth while.

Quarterly Journal of Medicine

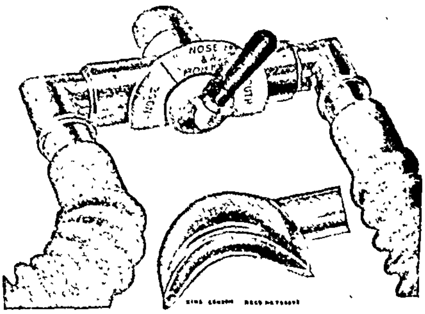
The current issue (April, 1935) contains several papers of unusual interest. E. A. Cockayne, David Krestin, and Arnold Sorsby report fully the history of two families exhibiting the Laurence-Moon-Biedl syndrome; the text is illustrated by fundus drawings and there is an extensive bibliography given.—Hugh Ramage and J. H. Sheldon give the results of their research into hæmochromatosis. They have examined the organs and tissues post mortem of five cases of this disease in order to discover the distribution and quantities of the deposits of iron and sulphur in excess over the normal. Their figures for the sulphur content differ considerably from those of Loeper, Ravier, and Lesure. They further estimated the copper and calcium content by means of the spectroscope.—G. C. Linder has investigated the influence of infection on the action of parathyroid hormone in man; the method was to estimate the serum calcium and its response to Parathormone injections in cases of typhoid and pulmonary tuberculosis. From the results no general rule could be formulated.—Crighton Bramwell has analysed by means of graphic records the sounds and murmurs of auricular systole. He is able to demonstrate that the initial vibrations of the first heart sound are produced by the auricle and not by the ventricle, and that the auricular sound is not entirely due to a muscle tone but in part at least to vibrations set up by the blood ejected by the auricle. He has also studied gallop rhythm, reviewing the clinical findings and after-histories in a consecutive series of 62 cases in which the sign was present. He puts forward a hypothesis regarding the mechanism of production of this rhythm.—R. S. Aitken and C. Wilson have attempted to demonstrate a pressor substance in the blood in malignant hypertension, similar to the one described by Bohn. They were unable, however, to confirm Bohn's claim.—S. Levy Simpson contributes a paper on secondary pellagra in which he establishes a relationship between pellagra and adrenal hypofunction and describes the mechanism by which the condition is produced.—R. S. Handley and A. M. Nussbrecher give details of a family in which the classical symptoms of hæmophilia appear in women and review the literature of hereditary bleeding in women.

NEW INVENTIONS

APPARATUS FOR GAS ANÆSTHESIA

When gas is administered for dental operations time is lost while the face-piece used for induction is being removed and a nasal tube adjusted. Our object has been to avoid this delay.

The apparatus, which can be adapted to any satisfactory gas machine, consists of two delivery tubes emerging from a head with a three-way valve. This makes it possible to deliver the anæsthetic gases to the mouth only, to the mouth and nose simultaneously, or to the nose only. The mouth delivery tube ends in a metal inhaler of special design which allows easy access to the nostrils when it is in place. The nose delivery tube ends in an attachment to accommodate either a standard nasal inhaler or a nasopharyngeal tube. Anæsthesia is induced by administering the gases through the mouth with the valve turned to "mouth only." A mouth-prop is inserted, the patient is asked to breathe easily through the mouth, and any nasal breathing is checked by gently compressing the nostrils. After induction anæsthesia can be maintained while the pharyngeal catheter is passed through the nostril or nostrils and secured in place. The gases are then passed through nose and mouth simultaneously for a moment while anæsthesia is steadied. The valve is turned to "nose only," the mouth inhaler is dropped, and the mouth is packed with gauze in preparation for the operation.



The advantages claimed are: (1) the nasopharyngeal tube can be passed without undue haste; (2) resort to ether, or ethyl chloride, is unnecessary; (3) simpler nasal tubes, such as Boyle's tubular nose-piece (two curved metal tubes for insertion into the nostrils), can be used; (4) the mouth inhaler materially assists in obtaining induction if the ordinary type of nasal inhaler is used; and (5) the wide-bore supply tube to the mouth inhaler allows of rapid induction without the feeling of suffocation or discomfort associated with small-bore tubing.

The apparatus has been made by Messrs. Charles King Ltd., Devonshire-street, London.

H. Parry Price, M.R.C.S. Eng.,
Reading. G. H. Ellingham, L.D.S. Birm.

THE LANCET

LONDON: SATURDAY, MAY 4, 1935

The peace which has prevailed in our constitutional affairs during the rule of His Majesty George V. has been unbroken, and his claim on the affections of his subjects, always amply proven, receives next week a full demonstration. While other principalities and powers have gone down, to disappear or rise again in altered shapes, the King governs a united Empire and every national activity must have benefited, and must be benefiting, from the justice and stability of his reign. When the calling of medicine is in question such a period as 25 years presents a problem in retrospection. The period is a considerable one, long enough to leave deep imprints upon the path of progress, but not long enough to make any surmise certain as to what details of the progress will be found later of permanent value. It so happens that the span of professional life of both the physician and the surgeon to His Majesty's Household coincides broadly with that of his reign. The retrospects which follow from their pens supply unanswerable reasons for a belief that our medicine will maintain, and enhance in virtue, what of fundamental good lies in the efforts of the past 25 years, while subjecting all developments in our science to a scrutiny which until recent years has been undreamt of. Dr. Ryle, physician to Guy's Hospital, and Mr. Walton, surgeon to the London Hospital, from different angles, testify to a spirit of scientific union in the ranks of medicine which must promote the consolidation of all that we would have kept, while forming the firm foundation for the rise of greater things in the future. The fusion of ideals and of interests among those in charge of the health of the country has become a very real thing, and the creation of that fusion is the conspicuous characteristic of medicine during the past 25 years. The profession of medicine, when joining all ranks and classes in loyal congratulation to King George and Queen Mary upon the jubilee of their reign, can point with honourable satisfaction to real advances made under their administration, and to a vast vista of promise.

MEDICINE 1910—1935

By John A. Ryle, M.D., F.R.C.P.

PHYSICIAN TO HIS MAJESTY'S HOUSEHOLD

I

To have lived the more active part of one's life within the first 25 years of the present Georgian era, observing and sharing, in however humble a degree, its manifold changes and reactions, confers on review a deep sense of privilege. For medicine it has been an eventful era. The medical sciences, in concert with other sciences, have registered a proud succession of discoveries, while medical practice has been both enriched and embarrassed by the rapidity of progress and accumulations of new method.

Beside me as I write I have the 1910 edition of "Osler's Medicine" and a modern text-book. The first remains a classic and a rich mine of clinical information, but, lacking wide tracts and chapters embodied in the second, which relate especially to developments in the diagnostic fields of radiology and biochemistry, it has become inadequate. In 1910 I was a clinical clerk in the wards in which I now teach. The reports which we handed to our teachers then were rarely weighted with the sheaves of documents from chemist, bacteriologist, hæmatologist, radiologist, and clinical specialist which my own clerks now assemble. I am grateful to have lived and to have been taught in that easier period by men trained in the tradition of the physician-pathologists for which my school is famous, and I still believe, as they and Osler believed, that the bedside, the out-patient department, the dead-house, and the practice which comes later must continue to provide the chief foundations of our medical art. The problems of man in disease will always require for their solution processes additional to strict scientific assessment. I commiserate the present generation of students on the score of the size and complexity of their curriculum and the difficulties which they must experience in combining and applying their departmental knowledge. I envy them, on the other hand, for their superior endowments in chemical understanding and for the inspirations of the times in which they live. Between them they have already witnessed the introduction of insulin and liver therapy; the much more effective handling of the secondary anæmias; the more certain and earlier recognition and control of many disease-processes with the aid of blood chemistry; the more intelligent applications of psychology, supplanting the electricity, bromide, and valerian of an earlier day; and many advances due to better medico-chirurgical coöperation.

It would also, I believe, be fair to say that the relationships between teacher and student have become more free and friendly. Instruction is less didactic and authoritative and open discussion is more commonly encouraged. Rapid increments of knowledge, for all the help which they have given, have however made new difficulties by increasing the number of possibilities and inquiries to be reviewed in the problematic case. Certainty and completeness in diagnosis appear less easy of attainment than they did when precise checks and controls were lacking. On the whole there is more humility both among teachers and students. In therapeutics conflicting views, especially where there are medical and surgical alternatives, complicate judgment, while the multiplicity of theories and remedies which infiltrate the mind by way of individual teaching, the journals, and the advertisements of the proprietary chemists are a constant embarrassment.

The growing habit of intensive specialisation has been good for the special subjects and has brought benefits to countless patients, but for the time being its influence upon medical thought and practice as a whole and upon undergraduate teaching has not been altogether good. Inevitably it has encouraged men to ignore that close interdependence of part and whole and environment to which the biologists and the philosophers have become increasingly attentive in recent times.

II

It is impossible to estimate our indebtedness where diagnosis is concerned to modern radiology, endoscopic methods, and biochemistry, or to the many therapeutic improvements in the fields of special surgery, pharmacology, and dietetics which the past quarter of a century has brought. We are, however, an impatient profession and liable to queer crazes and misapplications of our science. I do not wish to overstress the abuses which have followed new knowledge and technical advantage, but be it remembered that within the era under review, and especially its post-war phase, we have witnessed the misapplication of bacteriology in a riot of ill-considered vaccine therapy; the arrival and, let us hope, the departure of unhealthy experiments in amateur psychiatry and analysis; and the rise and fall of a crude mechanistic surgical epoch leading to excessive operating especially in the abdominal field. It is, however, remarkable and gratifying that within this same brief era we are already observing the return to sanity and balance. We are testing our new tools and using them to fuller and fuller advantage. We are more frequently allowing science to correct our art, and more rarely permitting our art to bring discredit on our science.

It becomes daily more apparent, however, that something more than a revised curriculum will shortly be needed to set our professional house in order. The standards of general medicine must be improved even if it requires such educational changes as the postponement of the more specialised studies until after qualification, or the addition of a few months spent in apprenticeship to experienced general practitioners before qualification. Better facilities are needed for obtaining qualified hospital appointments both before and in conjunction with practice. To balance the inevitable and necessary multiplication of specialists we require, as a leaven, a larger proportion of well-trained general physicians and a higher average of culture and attainment in the coming generations of students destined for general practice. The public has been partly to blame for present dissatisfactions by reason of its own over-insistence on specialist advice; credulous ever and avid of the newer mode it is not aware that the maladies and problems of our forbears were commonly far better handled by general practitioners of the old humane, if less scientific, school than they are to-day by multiple tests and X rayings and visits to a succession of consultants. Important innovations in municipal and State medicine have added to the difficulties of practice by a gradual withdrawal of much work, with its attendant experience, which formerly belonged to the family doctor.

III

The last 25 years of medicine may conveniently be divided into three periods, 1910–1914, 1914–1918, and 1918–1935. In the first period teaching was predominantly broad and clinical, soundly backed by morbid anatomy and histology and the valuable additions to diagnosis which bacteriology had supplied. The Wassermann reaction had recently arrived and the arsenical treatment of syphilis had been discovered. Laboratory medicine and diagnostic radiology, as we now employ them, were in their infancy. There had been no big changes in the medical systems of the country apart from those due to the Insurance Act, which brought both advantages and disadvantages in its train.

In the second period those who were so situated as to gain their war experience in hospitals and clearing-stations received what was in fact a new medical education. The treatment of wounds and fractures, intensively studied on a vast scale, was improved beyond belief. The pathology of wound infection and the treatment of chest and head wounds received combined study at the hands of surgeons, physicians, radiologists, and pathologists with the happiest results. The protective uses of typhoid inoculation and of the early administration of tetanus antitoxin were proved and justified to the hilt. Blood-grouping and transfusion came into their own. Tropical diseases, the effects of gassing, and "new" diseases such as trench fever, trench nephritis, and spirochætal jaundice were subjected to intimate investigation by team-work of a highly productive kind. At home the study of the "soldier's heart" gave a new impetus to cardiology, and the study of the war neuroses laid the foundations of much that is good in medical psychology in this country to-day.

Where all else was destructive it is something to remember and be proud of that the medical services did not fail in any part of the reparative work allotted them and that, simultaneously with the performance of arduous humane and military duties, they advanced knowledge by patient observation and research and added important chapters to British medicine.

One of the most effective developments of war-time medicine was what came to be known as team-work. Unhampered by any considerations of career or livelihood, and stirred alike by the spirit of the times and enthusiasm for their patients and their subject, the members of medical, surgical, and mixed teams at work on the various fronts applied themselves unanimously to their tasks in a manner which seldom seems possible in civilian medicine to-day. An historic example of the benefits of applied "team-work" was provided by the King's illness, in all the details of the investigation and conduct of which reminders were forthcoming of the combined medical and surgical treatment of chest wounds with pathological controls which took place in the clearing-stations and base hospitals in France.

In the medical schools and special hospitals it is difficult, where it might seem easiest, to secure this intimate and happy coöperation. The claims of teaching and practice and other routine and problems of administration all militate against full success. The Medical Units, which have brought new motives into teaching and have given facilities for full-time workers, have other concerns and are not, as units, sufficiently representative or full time. An approach to the system has been attempted in certain private clinics whence valuable publications are occasionally forthcoming, but still the spirit and achievements are not comparable and the field of opportunity is too confined. If ever there were an opportunity to recapture the team-work spirit under suitable conditions this should, to my thinking, be found in the newly organised hospitals of the London County Council and the larger municipalities. Whole-time workers, relief from the necessity of practice and teaching, and unlimited material, with facilities for segregation of groups of cases, are the main essentials. In closely collaborative team-work is to be found the best answer to the artificial separations of medicine, surgery, and the ancillary sciences.

Of the post-war period I have already written partly in praise, partly in criticism. Medical philosophy has not prospered commensurately with medical science and technique. During the awkward years of reconstruction between 1918 and 1935 misdirections of thought and energy inevitably occurred, but they are already being remedied, and British medicine, as compared with the medicine of other countries, has maintained its general high level and has recorded significant gains. The yearly reports of the Medical Research Council make important reading. Neurology, psychiatry, cardiology, and pædiatrics have registered steady progress. "Clinical science" has been launched. There is scarcely a branch in which advances have not been made. Even in the difficult cancer problem new ground has been consolidated. The incidence of preventable diseases continues to fall. The toll of human life and suffering in acute and chronic diseases formerly beyond efficient aid has steadily diminished.

The year of the King's Jubilee, which has provided a fitting occasion for review, may well mark the initiation of a further phase of eager effort and fruition, affecting alike the science, the art, and the teaching of medicine throughout these islands and the dominions over seas.

SURGERY 1910—1935

By A. James Walton, M.S., F.R.C.S.

SURGEON TO HIS MAJESTY'S HOUSEHOLD

I

When a man's opinions become fixed his progressive work is finished. Vanity, which increases with age, shows a constant desire to prove that views expressed long ago are still correct. Only as long as a man is prepared to admit that his previous conclusions have been shown by the light of more recent knowledge to be incorrect is his mind young, active, and receptive. No surgeon therefore can ever feel that his knowledge is complete, for ever he must keep abreast of new knowledge and must be analysing his own results and comparing them with those of others. He must be altering his views and his treatment in accordance with these observations. It is often stated that surgery has now reached its limits and affords but little chance for progress, that treatment and investigation have become standardised and almost beyond discussion. If those who are depressed by such views would realise that even to-day there is hardly a single statement in surgery which can be made without fear of contradiction they would again take heart and feel that they also have a good opportunity of adding to the common stock of surgical knowledge. Perhaps nothing offers greater encouragement than to look back over a period of years and to observe the changes that have occurred during that time. Some of them may not be regarded by all as moves in the right direction and many of the older methods that have gone may be regretted, but there can be no doubt that more has been gained than lost for the common good.

The present time of His Majesty's Jubilee is a fitting one to look back and observe what progress if any has taken place during His Majesty's reign. Such a review reveals the fact that the changes have been very extensive, as they have been in every branch of civilisation. The whole period has been one of flux. As H. G. Wells makes one of his characters say, "This here progress, it keeps on. You'd hardly think it could keep on." It is so interesting a period in the history of the human race that even the most weary and jaded of us could almost hope for great prolongation of life to see in what direction we are moving. Much of the present may be depressing and unpleasant but there is also much to make us believe that we are not rushing to destruction and dissolution but are ultimately reaching to a higher and brighter life. In surgery this certainly seems to be the case and many lives that were doomed to a rapid termination or to years of misery are now saved, and their owners have been given years of comfort and happiness.

II

It is in the atmosphere and life of a large hospital that the changes are most in evidence, and that which would, perhaps, be most noticeable to one who has not visited his hospital for 25 years is the status and attitude of the surgeon not only to his patients but to his colleagues, medical officers, and students. In the first years of this century surgeons were regarded with awe and almost with reverence. They were individualists, ruling their own departments with an almost regal authority. Their knowledge was omniscient and their views infallible. On their arrival they were met in state, and in state they progressed round the wards. Their teaching was a combination of dogma and sarcasm concerning the views of others. They laid down the law with great authority but produced little proof of their statements. Their opinions were never questioned and to admit an error was considered as evidence of lack of knowledge. As a result they often came to believe in their own infallibility. They rarely met their colleagues, of whom they were often bitterly jealous, and although treating them with formal courtesy in their company were only too willing to belittle their work in the presence of students. They regarded all workers in the few laboratories that then existed as their servants. Theirs were the patients and all who worked among the patients were under the surgeon and his was the credit of their work. With such an attitude there was a grave risk that all work by others should be neglected and that when the surgeon retired his knowledge of surgery might be but little altered from that which he held on the day of his appointment.

III

Gradually and almost imperceptibly this has all changed. The individual surgeon is treated with much less awe and his work is subject to the keenest criticism, both during his clinical teaching and in the medical press. He is expected to produce proof of all statements in his writings and he must be prepared to be questioned on his remarks by any audience. His operating theatres are open to medical men from all parts of the world and while operating he must be ready to answer all questions on his technique and to state why he adopts one form of operation in preference to others. It is the presence of this critical environment which perhaps above all else compels a surgeon to keep up to date and to study his own results in comparison with those of other surgeons. On the other hand, his colleagues on the clinical staff, in the laboratories, and in the special departments, and his assistants in the wards are all his personal friends. He treats his colleagues with very little formal courtesy, but he knows that he can rely on their help even in the slightest difficulty. The cases are not jealously guarded as the personal property of the individual surgeon, but opinions are freely invited and patients are often transferred to the surgeon who has the widest experience and the greatest interest in that disease. And he no longer feels that it is derogatory to admit that others know more on one subject than himself; the advice of the most junior colleague is as eagerly sought as that of the senior. It is still to-day the greatest compliment to be asked advice by one's colleagues, but it is also the greatest satisfaction to seek it from others. Not only are the laboratories freely at the disposal of any surgeon wishing to work in them, but the greatest help and advice is willingly given by the heads of these departments. Young men working under a surgeon have every opportunity of making use of his clinical material and are encouraged in every way to carry out research work and to publish it under their own names. The surgeon realises that he can learn more and obtain more encouragement from the keenness and enthusiasm of younger men than from any other source. The present-day surgeon may have lost much of the old formality, but what he has lost in formality he has gained in friendship. He is no longer an individual worker for his own advancement, but a member of a large team working for the common good. This growth of team-work is becoming more and more necessary in private as well as in hospital work, and surgeons are finding it essential, especially in the larger operations, not only to operate in the same theatre but to employ the same anæsthetist, assistant, and theatre sister. The greatest admiration must be expressed for the older surgeons who worked with no skilled aid and with no conveniences, but the best results can only be obtained in the modern extensive operations with the help of a skilled and highly trained team.

IV

In the ordinary practice of surgery much advance has been made. Certain diseases which had a more or less hopeless outlook are now successfully treated and the patients' lives are saved. Tumours of the pituitary gland were rarely operated upon. Nothing was known of the surgical cure of hyperparathyroidism. Hyperthyroidism was only rarely treated by operation, and not only was the mortality very high but the value of operation was disputed by many. I once heard a famous physician state that it was as sensible to operate upon a thyroid for Graves's disease as to remove a kidney for diabetes. Splenectomy was rarely performed, and gastrectomy and colectomy for carcinoma were in their infancy. Perhaps however the greatest changes are those seen in the nature of the hospital population. Before 1905 the wards were filled with patients suffering from large ulcers of the neck due to tuberculous glands which had been opened and scraped. Excisions and amputations for tuberculous joints and bones were to be found on the operating list nearly every day. To-day such cases have almost disappeared and the majority of students pass through their whole career without seeing a case of operation for tuberculous glands or joints. Acute appendicitis was with us then as it is now, but the mortality with acute cases was nearly 80 per cent. The use of surgical gloves had only just been introduced and suppuration or even fatal sepsis was not uncommon after clean operations. But although we hear so much to-day of the marvels of modern surgery, there can be no doubt that the greatest progress has been made in what is the real aim of medicine, namely, preventive medicine. Not only has surgical tuberculosis greatly diminished, but typhoid fever which was so common before 1910 is now rarely seen in hospital. In the summer months of that period 40–50 children a day were sent away from a hospital to die, being already moribund with epidemic diarrhœa and vomiting. To-day these cases are rarities. Such great advances have been made owing to control of food, water, and sanitation that one can be certain that the disappearance of other diseases will follow in their wake. In days to come surgeons will look back with astonishment at the modern operations for appendicitis, for gastric and duodenal ulcers, and for carcinoma, and when the cause of the hyperactivity is known and prevented it will seem inconceivable that the enlarged thyroid of Graves's disease was ever removed by surgery. Medicine will ultimately progress so that surgery reaches its true aim, that of its own abolition. Already surgeons have ceased to be mere technicians and are physicians in their own specialty, and it would seem that one day the cleavage between medicine and surgery will cease and men will become specialists covering every branch in their own subject.

V

The progress of medical education is as great but is less well-defined and probably in a few years will undergo considerable further change. On all sides this subject is bristling with difficulties and is exercising the minds of teachers. Unfortunately in many respects the most satisfactory treatment of the patient is conflicts with the best teaching of the undergraduate student. Throughout medicine and surgery the introduction of more detailed methods of investigation and the increase of technical skill in treatment have led to the wide growth in specialism, so that more and more departments are established which the already overworked student has to attend. An undergraduate working for a pass degree requires to know *when* to operate and not *how* to operate, and yet a great deal of his time has to be taken up attending and assisting at prolonged and complicated operations which he ought never to be called upon to perform in general practice. Probably in a short time this part of his work will be delegated to post-graduates specialising in surgery. The enormous growth in clinical laboratories has led to much more reliable and intensive investigations of a biochemical and pathological nature and to-day has become essential for the investigation of most diseases; but it has removed from the student and the resident medical officer the feeling of responsibility which was so useful in his teaching and in his training of self-reliance. It has also added to his difficulties in that special classes have to be arranged for his training in clinical pathology. With the appointment of officers of higher training as skilled assistants his opportunity of carrying out minor operations has been lessened, so that post-graduate appointments have become increasingly important until they are now essential. It is difficult however to see how this can be avoided. Increased knowledge necessitates increased training.

Although there is therefore still much in surgery that is unstable and is bound to change, the many improvements that have occurred in the last 25 years show great progress. Surgery is international, and team-work has replaced individualism. Every man has increased powers of learning from those in his own country and abroad, powers which have been enormously enhanced by the growth of travelling, surgical clubs, and of medical societies, where all branches meet for free discussion, so that even the humblest worker who has no opportunity for research may throw a side-light on a subject which may lead to most valuable results. Every student who enters surgery to-day may feel that although his income may be less than in the past he will be able to make a living and will have that which will give greater happiness in life than financial profit—interesting and joyful work. And that he has, more than ever before, opportunities of making new discoveries and adding to the general progress of medicine.

ANNOTATIONS

THE PRACTICE OF PSYCHOTHERAPY

A LEADING article in our issue of March 16th, dealing with the difficulties surrounding the practice of psychotherapy, has called forth in our correspondence columns the expression of varied opinions, scarcely any of which seem to have escaped challenge. This state of affairs, at first sight depressingly suggestive of some inherent difficulty in the subject itself, resolves itself, on close examination, into the stimulating discovery that the subject is being approached by different people, not merely from different angles, but from different ends, whilst the absence of controversy about methods of treatment should be noted as marking an important advance. The modern psychiatrist, who by his change of title indicates a wider field of effort than the older alienist, seeks to take into that field the treatment of those disabling mental disorders which do not typically lead to the need for institutional care and are more accessible to psychological treatment than are the major psychoses. Approaching the subject from this end, and familiar with cases where delicate diagnosis may be necessary to avoid attempts at treating unsuitable patients, the psychiatrist regards experience in the major psychoses as an important element in the preparation for psychotherapeutic work. Hence we find one correspondent demanding the diploma in psychological medicine as a minimal requirement for those handling mental patients; and it must be admitted that the diploma, or a doctorate in mental diseases, is the only hall-mark available for the would-be psychotherapist. The requirement is, however, vigorously contested by a correspondent who declares that medical psychology is as fundamental to medicine as is physical examination, and sees no reason why any practitioner who has the time and inclination for the work should not practise psychotherapy. Here we note the approach to the subject at the end remote from psychiatry, and as a practical example of this approach may be cited an article by Dr. James L. Halliday on Psychoneuroses as a Cause of Incapacity among Insured Persons.[1] Dr. Halliday, whilst acknowledging his debt to psychiatric writings, used the methods of ordinary clinical medicine in demonstrating that over 30 per cent. of incapacity in insured persons was caused by psychoneurotic illness, most of it masquerading under other diagnoses. Though he did not touch on actual psychotherapy, he pointed out the need for an "integrator," a rôle to be played by "a general practitioner who will have been trained to recognise the elementary reactions of a person to the difficulties, including the happening of an organic disease, which must be encountered by everyone who passes through the ever-challenging environment of being alive." The context indicates that Dr. Halliday hopes for a reorientation of the medical curriculum which will enable the practitioner to fill this rôle.

These alternative avenues of approach explain the conflict referred to by one writer, rightly or wrongly, as "the silent contempt that now obtains between the institutional and the non-institutional psychiatrist." We must note at this point that the conflict expresses itself, as such conflicts often do, in a matter of nomenclature. The word *psychiatrist* may be, and often is, taken to mean a person engaged in asylum work as his chief interest; some non-institutional psychiatrists would repudiate the title, whilst asylum workers might deny their right to it. The word *psychotherapist* carries with it no claim to special acquaintance with asylum work and the two titles serve to indicate the roads by which their respective bearers have come near enough to be aware of their differences. There are psychotherapists who, beginning with the psychoneurotic as he is found in general practice and obtaining their training as best they can, whether by personal analysis or otherwise, gain—perhaps by their own mistakes—a knowledge of early psychotic cases at a stage before they reach asylums. If they are wise such practitioners will know when to seek the aid of the experienced psychiatrist; nor can it be denied that a short experience of asylum work would be helpful to them. On the other hand, the asylum worker who turns to the treatment of psychoneurotics will have much to learn from his non-institutional colleagues. Coöperation between those who have approached this important subject from different beginnings should be made easier, we hope, by the ventilation of their views in our columns.

ALVEOLAR VENTS IN THE LUNG

ANATOMISTS are still divided over the histology of the terminal portions of the respiratory passages. A. C. Macklin, who formerly upheld the view that the mammalian airways end blindly, has now recanted[2] in favour of those who describe minute pores, stomata, fenestræ, or (as he prefers to term them) vents, connecting adjacent alveolar sacs. Thick sections appear to be necessary for satisfactory histological demonstration of these vents, which vary in number and size in different species of mammals, their width ranging from that of a red blood corpuscle (or even less) to half that of an alveolar wall. He has demonstrated them in the lungs of human beings aged from 29 months to 80 years; apparently, therefore, they are not pathological in origin, although an emphysematous ætiology has been ascribed to them in some quarters, and their formation certainly resembles the changes of emphysema in that they must be formed by breaking-down of septa between adjacent alveolar spaces. Not only has Macklin converted himself to the histological proof of the existence of these vents, but he describes experiments which leave no doubt that there is free peripheral communication between lobules of the lung. Possibly the object of this communication is to equalise alveolar air pressure in adjoining lung territories, and where air-tubes are occluded it may help to prevent lobular atelectasis by allowing air to reach alveoli whose supply is otherwise cut off. It seems likely, too, that the vents act as safety-valves to prevent harmful over-distension of alveoli adjoining a territory threatened with collapse. In such circumstances they would doubtless widen so as to allow freer escape of air into the under-distended region; indeed, Macklin thinks that as a rule the smaller air vents are actually closed and do not open unless the alveolus is over-full. On the debit side is the possibility that they enable infected material (e.g., tuberculous) to spread from lobule to lobule—the process being encouraged by excessive distension of the alveoli and consequent enlargement of the vents spread from alveolus to alveolus through the pores.

SUPPLEMENTS TO THE DIET OF CHILDREN

IN an investigation reported by T. W. Simpson and Eric C. Wood[1] forty-eight children attending welfare centres were successively treated, according to a controlled experimental scheme, with cod-liver oil, halibut-liver oil and milk, and Virol, in doses of equal calorific value. Each child was under observation for twenty-four weeks—six weeks on its ordinary home diet and six weeks on the ordinary diet plus each of the supplements in turn. The growth-rate was measured by weekly weighings. Six weeks may be thought hardly long enough for the determination of the benefits, or lack of benefits, derived from the supplements, but Simpson and Wood state that preliminary experiments showed that four weeks' treatment was sufficient to produce an appreciable variation in weight, and in the main experiment distinct differences appear. The mean increase in weight per child for the six weeks' treatment was 1·84 oz. on the unsupplemented diet, 5·98 oz. with the addition of cod-liver oil (two teaspoonfuls daily), 6·94 oz. with the addition of halibut-liver oil (six drops daily) plus half an ounce of dried milk, and 15·88 oz. with the addition of virol (three teaspoonfuls daily). Taken as a whole, the results clearly suggest that benefit was derived from the supplements, but inspection of the figures subdivided by sex and period of treatment shows that the differences in results with the different diets are far from uniform; possibly, however, this is due to the small number of children involved. With the diet containing halibut-liver oil the investigators found significantly greater individual variations in growth than with that containing cod-liver oil, and they conclude that the accepted dose of halibut-liver oil contained too much vitamin A for some children and should not be regarded as suitable until a test has been made on the individual concerned. The supplement they advise consists of balanced calories and mineral salts, with a smaller amount of vitamins than is commonly recommended nowadays. During the experiment eight children contracted measles, four on the basal diet and four on the diets containing supplements; it is suggested that these figures may be a sign that resistance to infection was conferred by the supplements. The data, however, are too few to bear this out, while the high incidence of measles on children of all social classes when exposed to risk does not support the idea that resistance is readily increased by extra feeding. Broadly, this carefully planned experiment indicates that the basic diet of the children involved was little more than sufficient to meet their maintenance requirements, so that the additional 74 calories provided daily—though small compared with the total calorie intake—was of importance for growth. If the experimental and administrative difficulties are not insuperable it would be useful to have similar data from larger numbers of children kept on the different diets for rather longer periods.

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[1] Brit. Med. Jour., March 9th and 16th, 1935, Suppl. pp. 85 and 99.

[2] Jour. of Anat., January, 1935, p. 188.

[1] Med. Officer, March 30th and April 6th, 1935, pp. 125 and 135.

MALIGNANT TUMOURS OF BONE

The ultimate results of radical excision for osteogenic sarcoma of an adolescent bone make a sad tale, and even when surgery is backed up by vigorous pre-operative irradiation of the primary site and post-operative deep X ray therapy of the lungs, the number alive at the end of five years is tragically small. The obvious remedy—which amounts to a pressing necessity—is earlier diagnosis, for which Mr. Harry Platt, in his Lady Jones lecture,[1] makes a strong appeal, based on the solid fact that pain is almost invariably experienced before a tumour is appreciable, and although intermittent at first becomes severe and continuous as the tension in the periosteum increases. As three-quarters of these growths are in the neighbourhood of the knee, persistent pain in this region in a healthy adolescent or young adult calls for careful clinical and radiological investigation, with the possibility strongly in view that its cause may be a primary osteogenic sarcoma. Unfortunately at the stage when these growths offer a fair prospect of permanent cure their radiological appearance is far from pathognomonic and their diagnosis likely to present a clinical problem of such difficulty that the advisability of biopsy has to be considered. Mr. Platt, while opposed to the indiscriminate performance of biopsy—it should, he thinks, be used as a last resort and with great precaution—has found it a valuable aid in the diagnosis of early tumours in which the clinical and radiological findings are atypical. He advocates removal of the material under a tourniquet and its examination by a pathologist "continuously engaged in the study of the bone tumour problem," for he regards as a waste of time the occasional submission of material to a pathologist who is sceptical of the value of the method. The discovery of pulmonary metastases whilst the primary tumour is still quite small is happily very rare. Mr. Platt pays tribute to the success which has followed the mass attack on primary bone sarcoma in the United States of America.[2] The latest report of the American "bone sarcoma registry" contains records of 74 five-year cures of osteogenic sarcoma in a total of 504 registered cases. Early diagnosis and prompt surgical measures probably take the predominant share in producing these very encouraging figures, but an analysis of the figures suggests that Coley's fluid must be regarded as a potent agent. The results justify an experimental inquiry into the retarding action which these bacterial toxins exert on sarcomata. The results of irradiation alone in the treatment of bone sarcomata are disappointing. Mr. Platt gives a concise account of Ewing's tumour of bone, but does not refer to the work of Oberling,[3] who has made a good case for regarding these tumours as of reticulo-endothelial origin. In describing the secondary malignant tumours of bone, he points out that when a malignant adenoma of the thyroid or a hypernephroma of the kidney has been found associated with a solitary bony metastasis, both primary and secondary growths have occasionally been successfully excised.

PROF. BRERETON BAKER

The death last Saturday of Herbert Brereton Baker at his home at Gerrards Cross will leave a gap in many friendships. In the chair of chemistry at the Imperial College for 20 years he moulded the approach of innumerable science students to chemical problems, and no student escaped without the impress of his teaching, for Baker was a disciplinarian of the first order. He had had experience of less serious teaching material as science master at Dulwich College and headmaster of Alleyn's School, the lower school of the College, before he came to South Kensington. But just as much a part of his life was the urge to investigate the properties of gases, a research begun in his early days as assistant to H. B. Dixon at Oxford, and broken only during the war when he was called on to counter the unexpected and terrible dangers of gas attack. There is a current story, probably apocryphal, that he was unwilling to part to anyone with the secret of an ineffably fatal gas of his own. After the war Baker returned again with great content to the extraordinary discovery he had made earlier with Dixon that gases like hydrogen and oxygen can scarcely be induced to combine without the presence of traces of moisture; the interval had indeed served him in good stead, for it allowed some of his gaseous mixtures to undergo a year-long desiccation and to reach a state aptly known at South Kensington as "Bakerian dryness." At home he had the relaxation of profound absorption in fishing and other country pursuits, and the abiding joy of a wife who shared with him the interests of his scientific work.

VACCINATION AGAINST TYPHUS

The March *Bulletin* of the International Office of Public Health contains two interesting communications on different methods of vaccination against typhus exanthematicus fever which is prevalent in certain parts of North Africa. The first paper, which was communicated by Dr. Gaud, the delegate for Morocco, deals with the method originated by Dr. Georges Blanc, director of the Institut Pasteur of Morocco, and described by him in communications to the Académie de Médecine on Oct. 31st, 1933, and May 1st, 1934. In these Blanc had shown that the virus of murine typhus isolated from Casablanca rats immunised guinea-pigs not only against murine typhus, but also against classical typhus. As the result of further experiments he found that murine typhus virus, which from the first is only feebly pathogenic for man, can be rendered absolutely non-pathogenic by the addition of bile. The present communication relates the results of an investigation carried out by Blanc in conjunction with Gaud on 723 inmates of a penitentiary, aged from 16 to 60, 309 of whom were injected intramuscularly with 1 c.cm. of the vaccine in a dilution of 1 in 1000 and 414 with 2 c.cm. of the same vaccine in a dilution of 1 in 500. A febrile reaction lasting 4–9 days occurred in 1·6 per cent. of the first group and in 4 per cent. of the second. Revaccination of 75 persons with 1 c.cm. of a dilution of 1 in 1000 three weeks after the first inoculation was followed by no reaction. Tests were then made on five revaccinated persons, and it was found that whereas control subjects inoculated with murine typhus reacted in the same way as control guinea-pigs, the inoculated individuals showed no reaction at all; thus indicating that they were absolutely immune. The future will show the duration of the immunity conferred by this method. In the meantime Gaud regards it as at once practical, harmless, and efficacious. The second communication, which was made by Dr. Mohammed Shahin Pasha, the Egyptian delegate, gives a brief account of the uses of Weigl's method of antityphus vaccination which was carried out on 183 persons in an Egyptian village where typhus had been rife during the last two years. Three injections were given and in some cases were followed by a mild reaction. Only one of those inoculated subsequently contracted typhus. The village will be kept under observation for some time in order to determine the duration of the immunity conferred by the vaccine.

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[1] Delivered at the University of Liverpool on Feb. 21st, 1935, and published in the *Liverpool Medico-Chirurgical Journal.*

[2] American College of Surgeons: Twenty-second Year Book. Chicago. 1935.

[3] Oberling, C., and Raileanu, C.: Bull. de l'assoc. pour l'étude du cancer, 1932, xxi., 333.

GRAPHIC RECORDS

PICTORIAL representation of the progress and results of experimental investigations in pathology has long been recognised as a convenient and time-saving method of keeping records. Those familiar with the Scientific Reports issued from time to time by the Imperial Cancer Research Fund will recall the black silhouettes showing alterations in size and shape of induced neoplasms, the wedges which are used to indicate progressive growth, and the symbol of death (†) which, incidentally, is the accepted formula introducing obituary notices in many foreign journals. An effective example of the graphic method of representation as applied to records of human disease is supplied by the group of surgeons attached to St. Thomas's Hospital who combine in a contribution to our Prognosis series this week (see p. 1059). The method was instituted some years ago by Sir Cuthbert Wallace as an easy way of keeping follow-up records and of enabling after-results to be seen at a glance; by its use statistics of a large number of consecutive cases of various surgical conditions are being accumulated in accessible form. The 149 consecutive cases of carcinoma of the stomach which form the basis of the present article are divided into inoperable and operable cases, and the length of history, type of intervention, and subsequent duration of life are graphically recorded by a skilful combination of lines and dots. The original charts, reduced in size for reproduction, are made on squared paper with 12 divisions to the inch, so that on the convenient scale of an inch to a year records can be kept in months. It might be objected that such a pictorial record is necessarily incomplete. For example, the fact that the subjects of carcinoma of the stomach on whom it was possible to perform a partial gastrectomy lived nearly four times as long, on the average, as those with inoperable growth means little without the supplementary information, supplied in the text, that their discomfort was also greatly lessened. But the need for additional notes is implicit in any graphic representation which is not overweighted by so many signs and symbols as to lose its simplicity. Nearly everyone carries away a more deep and lasting impression from the contemplation of a picture than from study of a table of figures, and authors who believe that the statistics they have collected carry a cogent message are well advised to present them in diagrammatic form.

DEATH AND THE DOCTOR

DURING 1934 the *Journal* of the American Medical Association published the obituaries of 3231 physicians of the United States, and in its issue of April 6th these notices are subjected to a cold and impersonal statistical analysis. The average age at death was found to be 64·3 years, a figure that compares closely (as far as calculation is possible) with the age that can be computed for English medical practitioners from the Registrar-General's 1921–23 report on occupational mortality. In the States heart disease was the leading cause of death, followed, in order, by cerebral hæmorrhage, pneumonia, and cancer. Deaths from violence —accidents, suicides, and homicides—appear high, amounting to nearly 7 per cent. of the total, but no standard of comparison with other occupations is given and alone the figures are not very informative. A relatively high rate from violence would certainly be in accordance with the 1921–23 experience of England and Wales, for the Registrar-General's report shows an accident-rate more than double that of the other occupations of social Class I., and a suicide-rate double that of all occupied and retired males—though this latter high rate is shared by other occupations of social Class I. Taken as a whole, however, the *mortality of medical practitioners* in this country does not differ from the general average appreciably at any time of life. Acute non-tuberculous respiratory diseases, influenza, and pneumonia seem to be a special risk, but the phthisis mortality is low. The English and American figures appear generally to be in accordance though no close statistical comparison is possible. Considering the obvious facilities for adequate and systematic treatment, it is somewhat interesting to observe eleven American physicians recorded as dying of pernicious anæmia. This is a case in which the physician might well be expected to heal himself; perhaps the explanation lies in the certification and tabulation of death in which he could hardly be expected to assist.

ENGLISH PRISONS IN 1933

WHILE the health of our prison population continues to reflect great credit upon our medical officers of prisons, the latest annual report of the Commissioners of Prisons, dealing with the year 1933 (Cmd. 4872. 1*s.* 6*d.*), indicates that improvements in our administration of justice are still possible. The Medical Commissioner has repeatedly complained of the way in which courts of summary jurisdiction deal with mentally affected prisoners. There has been an unhappy tendency for magistrates to sentence to imprisonment a man whom they believe to be mentally defective or insane. Sometimes too they have asked the prison authorities to keep a man under observation during sentence so that the court may be informed of his mental condition prior to release. This information seems to be asked for with a view to dealing with the prisoner on some future reappearance by which time it may be valueless and misleading. In any event the practice is improper, since prison officers are not authorised to submit reports on the state of mind of convicted persons to anybody but the prison authorities. A third point is that medical officers, when asked to report on an accused person's mental condition, are not given such full material as to the facts and the medical history as they are entitled to have. The Home Office apparently drew the attention of magisterial courts to these three points during 1934. It is disquieting to find that cases still occur where offenders are convicted and sent to prison in spite of the fact that medical reports are before the magistrates which state that the men are certifiable under the Lunacy or Mental Deficiency Acts. There is no legal power at present to compel a defendant, when remanded on bail, to attend and undergo medical examination at a clinic or elsewhere in order that his state of mind may be examined. This gap in the law seems worth filling.

As regards women prisoners, the medical officer of Holloway Prison comments on the reception of a fresh type of prisoner—namely, girls under 21, sentenced to 7 or 14 days' imprisonment, who have been suffering from syphilis and gonorrhœa. He describes them as of low mentality, and observes that the shortness of the sentence gives no time to treat their physical, or investigate their mental, condition. They receive treatment while in prison but they return to the streets of some seaport town in an infectious state. The medical officer boldly suggests that, in spite of legal ideas of the liberty of the subject, the magistrates should be empowered to pass a sentence of such length as will give a reasonable chance that the woman's disease will be controlled if not cured—and this will mean many months.

The Medical Commissioner acknowledges the help of the civil hospitals where 156 prisoners and Borstal inmates were temporarily treated during 1933. A few abscond, of course, and the civil hospitals naturally are not enthusiastic about admitting convicts to a general ward; some prisoners, too, feign illness or produce conditions which require operative treatment in order to obtain the greater comfort of a civil hospital. For these reasons, he says, arrangements are being made for an operation theatre in a prison in the London area. Major operations are carried out in five provincial prisons with great advantage.

Since the last report was issued a medical psychologist has been attached for duty at Wormwood Scrubs. The present report warns us not to expect any early conclusions as to the value of psychotherapy in delinquent cases. The medical officer at Maidstone Prison has made a few attempts at psychotherapeutic treatment, but he records that in only a few cases was real coöperation obtained. He adds a cheerful story of one prisoner who wanted his dreams analysed. At the first interview it was found that what the man really wanted was a softer mattress, because a hard bed made him dream so much. The interviews were, by mutual agreement, discontinued.

WAR IN THE CHACO

THE war between Bolivia and Paraguay has been fought in (and over) a country that is barely habitable. Descriptions such as Duguid's "Green Hell" some years ago familiarised many of us with its uninviting characteristics, and from Dr. J. W. Lindsay we now have a report[1] which brings out the unusual nature of the medical problems that have arisen there. Dr. Lindsay has long been honorary medical officer to the Protestant Missions in Paraguay, and he tells us that the efficient medical services of the country sufficed in peace-time to cope with incipient outbreaks of disease; in fact, the fundamental disadvantages of the area are extremes of drought and damp rather than endemic infections. But the throwing of large masses of men into a roadless and often waterless country broke down the sanitary arrangements for the first six months of the war, and severe outbreaks of enteric, ankylostomiasis, malaria, and vitamin-deficiency diseases followed. The enteric was found to be due to a paratyphoid bacillus, *Salmonella paratyphus* Chaco, and has been largely controlled by a specific vaccine; hookworm anæmia has been dealt with by the issue of boots; the malaria was very benign, and a dry season has greatly reduced its incidence; while improved transport, allowing of proper rations, particularly of the yerba maté, has controlled the avitaminosis. Of maté, which has recently been shown to be rich in vitamins A and B and whose virtues have long been preached by travellers returning from South America, Dr. Lindsay states that it "makes the most wonderfully stimulating and sustaining army ration ever produced." The Bolivian prisoners were always found with a ration of coca leaves, and it is suggested that their lack of fighting spirit was due as much to the coca as to the character of the country which was so strange to them. The immense distances have made the transport difficulties colossal. At one time the Bolivian capital was 1535 miles from the front, of which about 1000 miles had to be on foot. The Paraguayans had 300 miles by steamer from Asunçion, then 100 miles of light railway, and 600 miles of marching. Bullock carts were at first the only means of transport for the wounded, but now improved roads and motor lorries are available, while air transport is used for serious cases, a journey formerly taking 2–3 weeks by bullock cart taking 2–3 hours by air. When Dr. Lindsay wrote, conditions had settled down, and a good bill of health was reported both in the Army and in Paraguay as a whole. Foreign medical officers, with the exception of Major Arthur Weiss, the Russian director of the Paraguayan Army Prophylaxis Corps, have now "faded out," and Paraguayan medical officers take service with the Army for six-monthly periods, continuing their civil practice in the intervals.

One enemy which the Paraguayans have quite failed to conquer is the flies. "In the hospitals flies were all over the dead and dying. In the field one would see half a dozen heaps of black, and they were found to be dead bodies buried in flies."

OF HEALTH RESORTS

LAST week saw the opening of new baths at Woodhall Spa and of a new clinic for the treatment of rheumatism at Buxton. Details of the latter function are given this week in connexion with a report of the simultaneous meeting at Buxton of the British Health Resorts Association. The proceedings at both spas were similar in respect of the things that were said at the meetings, the unanimous opinion being expressed that the spa and the health resort were now proving themselves essential to any national scheme for the promotion of physical well-being. At Buxton the suggestion was made that centres for health and recreation at suitable places, whether inland or on the coast, should be established not necessarily directed only to the treatment of particular diseases or to the reception of various classes of patients, but prepared to receive a general public seeking what they could offer. The idea has much force. Our younger population, especially the urban among them, to-day gain improved physical health and pleasant change of environment by hiking in company, and a scheme that would provide these gay and sensible bands with centres at which meetings among themselves could be held has much to commend it, for the modern tramps by force of numbers and coöperation would obtain the necessary amenities. And they would thus supply a practical argument for the brightening of the social life at our existing spas. At the Buxton meeting this came in for comments of a severe character; and though the speakers framed their criticisms with a spirit of levity, in their joking they were very serious. What Sir Landon Ronald said of the artistic appreciation displayed by spa authorities with regard to music was completely scathing although so urbane, while Mr. St. John Ervine described their dramatic taste in terms of devastating drollery. They succeeded in convincing their audience that spa authorities would have to consider the position, for though the dullness of the British health resort has met with frequent denunciation, it has never before been so cruelly and aptly expressed. It seems clear that the time-honoured plea of the rigour and caprice of the British climate will not suffice as an answer to those who ask that some mental food and relaxation should be offered to spa patients, and especially to their accompanying friends, who outnumber them. At all our health resorts the accommodation has vastly improved and is still improving, while the medical science displayed at them is now of a high order and the practical adjuncts to treatment, often very costly, are supplied in immediate response to medical requisition. The patient is placed in the most pleasing surroundings possible and his medical care is sound and scientifically applied. It is administered by physicians and surgeons who not only have the special skill and experience necessary, but who are stimulated by real enthusiasm for practice along their special line. These are great things; they are indeed the greatest things; but the fact remains that the social life of the spa is grey. Better music and better dramatic entertainment during the seasonal periods would work a real change.

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[1] Trans. Roy. Soc. Trop. Med. and Hygiene, 1935, xxvii., 539.

DISTRESS AND HEALTH

LAST December Dr. G. F. Walker wrote a letter to the *Times* declaring that in the district where he works, "between the Tyne and the Tees," there is a substantial and progressive deterioration in public health. This deterioration, he said, is taking place despite "resolute, competent, and generous local efforts," and he wanted to combat the tendency towards complacency in national feeling about the distressed areas. His general conclusion so far conflicted with the opinions expressed in Sir George Newman's annual reports that the Ministry of Health immediately instructed Dr. James Pearse, Dr. J. Alison Glover, and Mr. F. W. Grant to investigate the state of affairs thus represented. The results of their inquiry in Sunderland and its neighbourhood [1] give no grounds for the complacency which Dr. Walker deplores, but neither do they justify his belief in a serious and progressive decline. The investigators think that he "has been misled by his professional contact with the sick into drawing conclusions which he applies generally to a wide population, and that he has limned a medical picture in unduly dark lines to correspond with the economic background of a depressed area." If his object was to emphasise that the burden of combating disease is more than this area can bear, this object may have been legitimate; but they regard the medical basis of his arguments as unsound. In particular, Dr. Walker maintained that children and young adults are nowadays more prone to infections and catarrh; that anæmia of malnutrition is increasing; that conditions in the district make chorea and rheumatism endemic; that neurotic maladies are distressingly common; that rickets is highly prevalent; and that conditions of bodily dilapidation are causing a startling increase of metabolic diseases such as diabetes and pernicious anæmia; while "thousands and thousands of poor people in this area labour under disabilities such as pyorrhœa, deafness, gastritis, sciatica, bronchitis and sinusitis." Dr. Pearse and Dr. Glover, however, find that the general death-rate, the infant mortality-rate, the death-rate from bronchitis and pneumonia, and the case-mortality of scarlet fever and diphtheria do not indicate unfavourable effects from the present economic conditions. Tuberculous infection is still much in evidence, but except in the age-group 15–24 (which tends to be disturbing throughout the country) there is no sign that the long-continued unemployment has done more than retard the rate of improvement. Clinical examination has shown minor manifestations of rickets in 4·5 per cent. of young children seen at welfare centres, but the disease has much diminished in prevalence, and gross rickets is rare; "no other deficiency diseases have appeared." Clinical examination of persons in various categories suggests that about three-quarters have a good standard of health, the condition of adolescent youths being the least satisfactory. There is some prevalence of anæmia but it does not seem to be rapidly increasing; there is little reason to think that catarrh is commoner; and though there may be more neurotic maladies, Dr. Pearse and his colleagues are impressed rather with the courage with which difficulties are faced. The slightly higher incidence of acute rheumatism and chorea in the area is probably associated epidemiologically with the recent prevalence of scarlet fever, and is general in the county. Of the minor disabilities mentioned by Dr. Walker, pyorrhœa is notably common, and also perhaps gastritis; but there is no sign of increase in diabetes or pernicious anæmia. Though Dr. Walker's views are supported by some members of the medical profession in Sunderland and the adjacent districts (one of their letters is quoted at length), his colleagues on the whole disagree with what he says—except perhaps about the degradation in temperament of young men. Practitioners of wide experience have said that conditions are better than formerly owing to the operation of the public health services, and readers of this illuminating report must be thankful for the existence of these antidotes to some of the poisons attacking our social system.

THE governors of St. Bartholomew's Hospital have accepted a tender for the erection of a block of buildings to provide accommodation for 250 medical beds. Building operations will begin at once, and the work is to be completed in a year and a half. The new medical block will be known as King George V. Building. It is hoped that the private Bill now before Parliament will enable some of the accommodation to be used for the benefit of middle-class persons.

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[1] Report of an Inquiry into Effects of Existing Economic Circumstances on the Health of the Community in the County Borough of Sunderland and certain districts of County Durham. London: H.M. Stationery Office. 1935. Cmd. 4886. Pp. 52. 9*d*.

PROGNOSIS

A Series of Signed Articles contributed by invitation

L.—PROGNOSIS OF CARCINOMA OF THE STOMACH

This article is based on 149 consecutive cases of carcinoma of the stomach admitted to St. Thomas's Hospital under one firm during the 13 years, 1920–1932, under the care of one or other of us.

The few cases operated on during this period for chronic ulcer, in which microscopy suggested small areas of so-called malignant change, are not included in this series. Prognosis in such cases has been found by us to be invariably good, as contrasted with primary and undoubted carcinoma; we do not believe that such cases are, in fact, malignant.

The accompanying charts are self-explanatory. This particular method of recording a graphic representation was instituted by one of us (C. S. W.) as affording an easy method of keeping the "follow-up" records up to date, and of enabling the after-results to be seen at a glance.

In the two charts each horizontal line represents one case; the dark vertical line the date of operation, or of admission if no operation was performed; to the left and right of this line are shown the duration of the history and duration of life after operation respectively, each large division representing a year and each small division three months.

The total of 149 cases has been divided into two groups; the inoperable, in which excision was not possible, are shown in Chart I, and the operable, in which a partial gastrectomy was performed, in Chart II.

INOPERABLE CASES

The 122 *inoperable* cases are shown in Chart I. Of these, 1 was untraced; only 9 lived for a year or more after operation, but 1 lived for 3 years and 1 month. Excluding the case not traced, the average duration of life of the remaining 121 cases works out at 3·3 *months.* If the 17 patients who died within one month (all of these were operated on) are excluded, the average duration of life of the remaining 104 cases works out at 4·0 *months.*

It may be noted in passing that these 104 cases were made up of (*a*) 70 patients upon whom a short-circuiting operation, or one enabling food to be taken, was performed—that is to say, gastrojejunostomy 56 cases, gastrostomy 13 cases, jejunostomy 1 case; and (*b*) 34 patients upon whom either a laparotomy only was performed—26 in all, or no operation was performed—8 in all. The expectation of life in the former group of 70 cases was 6 months, and although a gastrojejunostomy relieved pyloric stenosis as such, it did nothing to relieve the gastritis which is associated with carcinoma of the stomach, and is a principal agent producing symptoms. Attempts to relieve gastritis by therapeutic measures proved extremely disappointing.

OPERABLE CASES

The 27 *operable* cases are shown in Chart II. One lived for 6 years and 3 months (carcinoma proved microscopically). The average duration of life works out at 12·3 *months*—i.e., nearly four times as long as the average in the inoperable group. If the 9 patients who died within one month of the operation are excluded, the average duration of life of the remaining 18 cases works out at 18·5 *months.* Assuming that all deaths occurring within one month of the operation are due directly, or indirectly, to the operation, the

CHART I

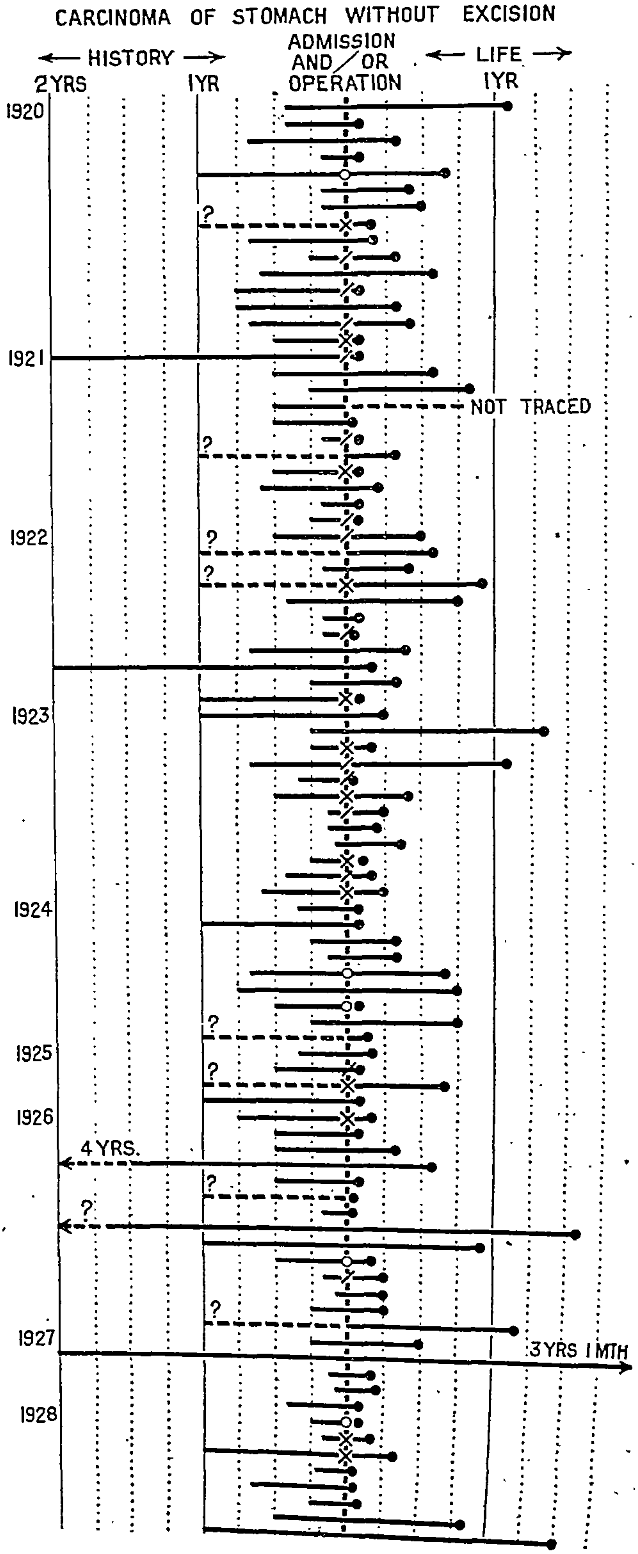

CHART I

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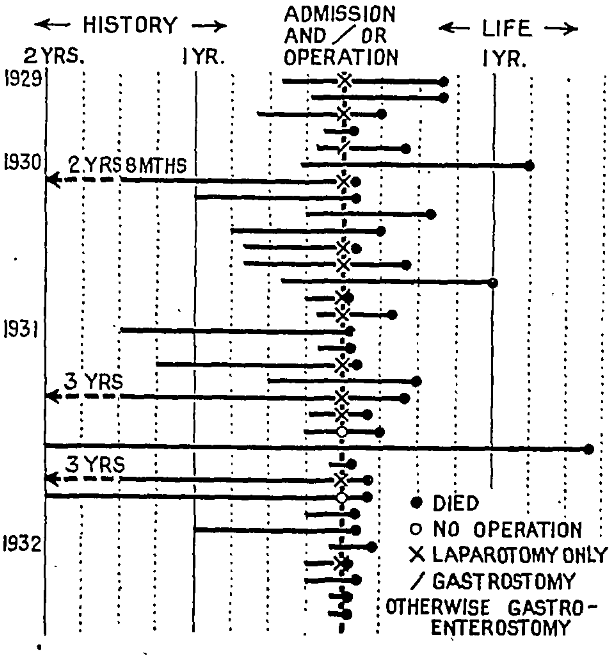

operative mortality works out at 33·3 per cent. The causes of these 9 deaths were as follows: shock 2, peritonitis 1, duodenal fistula and peritonitis 1, pulmonary thrombosis 1, broncho-pneumonia 2, exhaustion and cardiac failure 2.

Although not quite within the scope of this paper, it is of interest to note that the average length of history in the inoperable group (excluding 9 cases, duration unknown) was 7·1 months (Chart I), while that in the operable group (excluding 1 case, duration unknown) was 5·5 months (Chart II). The short history in almost all these cases of carcinoma of the stomach contrasts with the long history in almost all cases of chronic ulcer, and is a strong argument against the view that carcinoma commonly starts in a chronic ulcer.

While it is generally recognised that the results after partial gastrectomy for carcinoma of the stomach are bad, and those after some palliative operation are worse, the mere statistical data do not give a picture of the relief of suffering obtained by the radical operation, for from personal observation there is no doubt that the remaining months of life are far less distressing for a patient who has had a partial gastrectomy than for one who has not.

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Surgeon to the Hospital.
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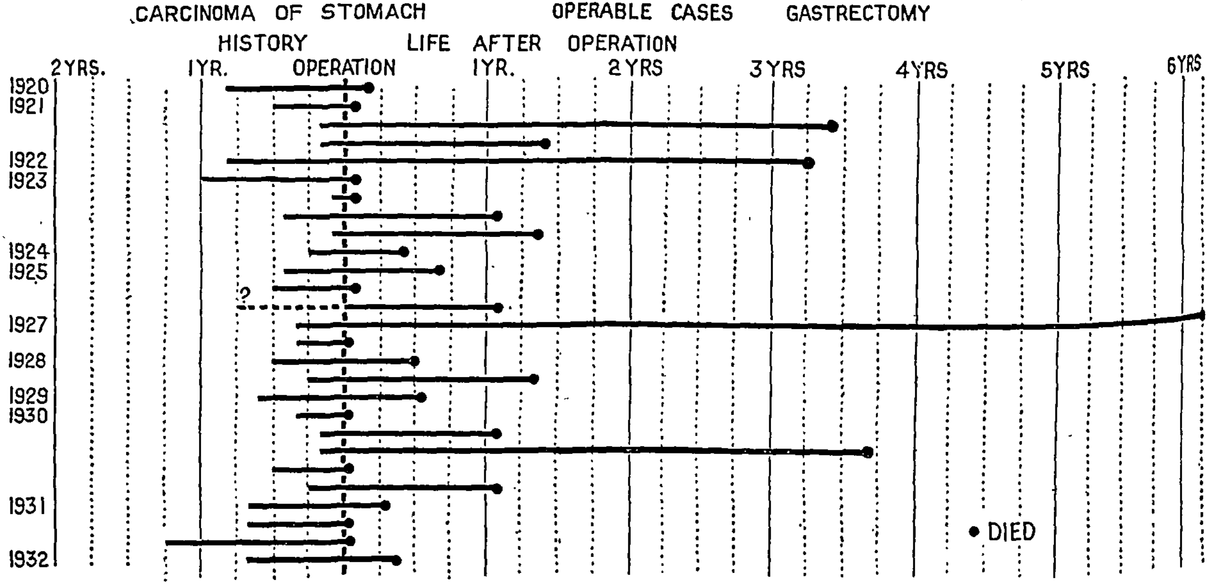

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Lord Horder said that he would be deliberately brief as the company were to inspect the new clinic at the close of the talking. The particular duty before them to-day was to see the new clinic for rheumatic diseases by which valuable and appropriate treatment could be provided for those whose social status made them ineligible as charges of voluntary hospitals. Of the Royal Devonshire Hospital at Buxton he said that it was actually the oldest institution in the country which had devoted research to rheumatic disorders, and now, with the establishment of the new clinic, efforts were being made to advance pathological investigations, assisted by the most modern equipment. He spoke warmly of the team-work done by Buxton doctors; as clinicians and orthopædists, pathologists, biochemists, and physicists their services were available, and he proclaimed his personal enthusiasm about the future of the clinic. Alluding to the modest prices which would be charged, he said that as an advocate of the paying beds system he had always held that there should be facilities afforded to the patient of moderate means. That this would be so at the Buxton clinic gave special pleasure to his duty in declaring the institution open.

The clinic was then open for inspection. It is situated at one end of the famous Buxton crescent, receives 100 patients, and contains every convenience of a modern hospital—careful lighting, central heating, and ample hot and cold water-supply in the separate rooms. The general accommodation includes a reception-room, lounges for men and women, and consulting-rooms for doctors. There is provision for the developing of X ray photographs, while arrangements have been made with the authorities of the Royal Devonshire Hospital for the services of their bacteriological and biochemical departments. The clinic is in direct proximity to the baths which can be reached under cover, the patients virtually residing in the same building. These, with their range of swimming pools through which water continually flows at its natural temperature of 82°, are admirably designed, and the arrangements for packs and colloidal heat baths, for colon lavage, and for manipulative douching, where the massage of the patient is undertaken under thermal water, are complete.

In the evening the Mayor of Buxton, Councillor W. R. Sanders, J.P., presided over a dinner at St. Anne's Hotel, when the corporation welcomed their guests. After the loyal toasts the Duke of Devonshire proposed Lord Horder's health saying that Lord Horder had been a good friend to Buxton already and was giving further proof of his regard for the spa by opening the new clinic that afternoon. Anything, said the Duke, that would relieve the human race of the scourges of gout and rheumatism was welcome to-day, and he concluded by making some pertinent remarks on the amenities of spa life, referring to that "greatest nuisance of the post-Victorian era, the noise of the motor-car." Lord Horder, in reply, gave some humorous details of the charges that were wont to be paid at the Buxton spa some 400 years ago, when the weekly rates for visitors had been fixed as follows: dukes, £3 10*s.*, that being exactly the charge for the cheapest bed in the new clinic; earls, 10*s.*; doctors, 10*s.*; gentlemen. 3*s.*; yeomen, 1*s.* Lord Horder thought that as half the money paid went to the doctors they got a good rebate on the charges. He quoted a letter addressed to the director of the baths by Queen Elizabeth as showing that Her Majesty possessed a pretty wit. The Earl of Leicester was undergoing a treatment and the Queen wrote as follows:—

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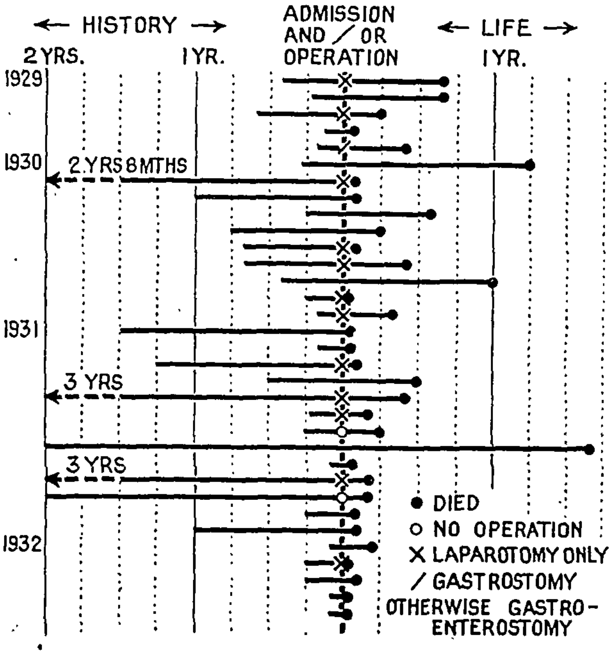

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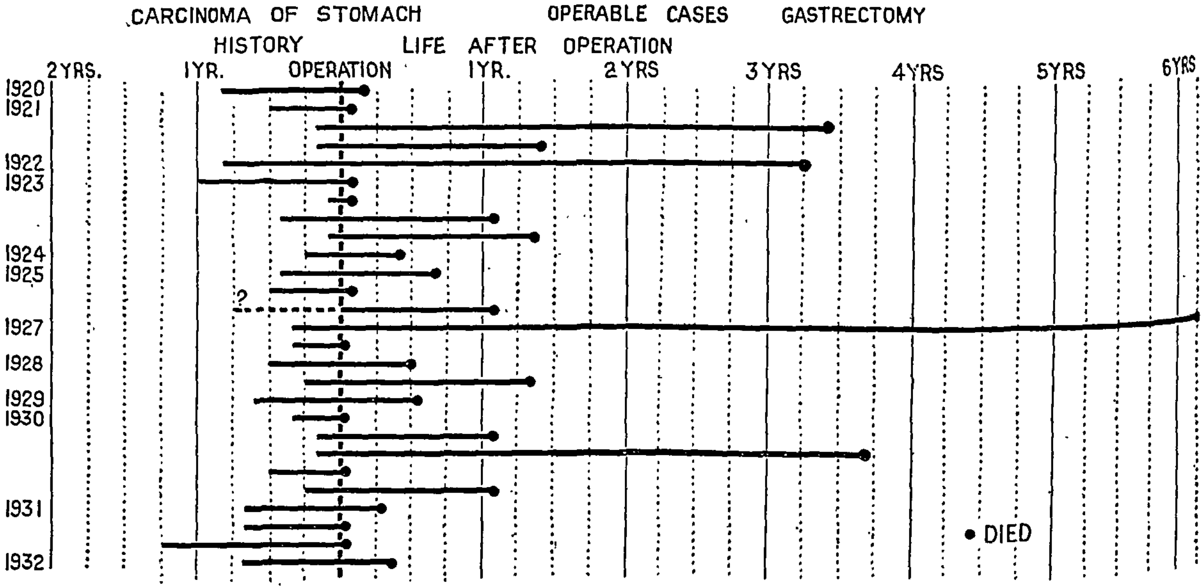

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Conference of the B.H.R. Association

On Saturday the work commenced with an inspection of the thermal and natural baths under the guidance of local medical men, after which a conference took place in the Hippodrome. Lieut.-Colonel W. Byam, chairman of the medical advisory committee of the B.H.R. Association presided, and began by thanking the Mayor for the hospitality of the borough. He pointed out that the Association was not purely and directly medical, though it existed for health purposes. It held that health centres should be instituted throughout the country, and properly planned. In those that existed reforms should be made, accommodation at hotels should be varied, transport should be made safe and unnecessary noise abated. Besides proper provision of medical care for the patient and suitable amenities, there should be means of entertainment not only for the patients but for the friends who accompany them. He looked forward to the establishment of a diploma for those duly equipped in physiotherapeutics, hydrology, and climatology, and official recognition of a practical sort for approved health resorts. He called upon Sir Landon Ronald, principal of the Guildhall School of Music, to open a discussion upon

THE PLACE OF AMUSEMENT IN THE HEALTH RESORT

"What can be done," asked Sir Landon, "and what should be done to make our own beautiful watering places more attractive?" And he followed by referring to the depressing influence of many post-war restrictions.

"But," he said, "my job in life is music, and I have only referred to these grievances because they play an important part in the problem of what sort of entertainment should be provided at the seaside. A couple of years or so ago I visited several of our most popular resorts during the summer holidays for the purpose of finding out firstly what sort of music was provided for the people; secondly, what sort of bands or orchestras they were asked to listen to; and, thirdly, what sort of performances were given. I must admit to you that I came away a sadder but wiser man. In several cases I found the programmes beneath contempt; I found that the so-called 'orchestra' seldom consisted of more than from six to fifteen instrumentalists; and, lastly, I found that the performances were obviously under-rehearsed and generally ragged and rough. Let me hasten to add that the blame for this was not to be attached either to the conductor (who generally led the band by playing the violin) or to the instrumentalists. The cause of it all was the short-sighted policy of false economy pursued by those who governed the town. Music is still looked upon by many town councillors as one of the most expensive of all objectionable noises."

Sir Landon went on to comment on the absence of any enjoyment in or knowledge of music to be found among civic corporations, making a conspicuous exception in favour of Bournemouth where the corporation had provided a good permanent orchestra under Sir Dan Godfrey, no doubt at much expense, but the residents were convinced that the money was well spent on a magnificent advertisement of the town. His reminiscences of the fine orchestras that existed at different centres in England 30 or 40 years ago were sad, but to the question whether he had any remedy to offer he would reply that there were great London orchestras which had no concert engagements during the summer months, and that these might be engaged say for three weeks at a time to play in large seaside places. Entertainment managers, he said, underrated the public intelligence in thinking that they are as satisfied with half a dozen instrumentalists playing fox-trots as they would be with the London Symphony Orchestra playing beautiful light music—for there was no suggestion that only high-brow compositions should be given; and when the expense was spoken of he would refer to the enormous sums spent by some of these places in promenade and building schemes.

"In suggesting," he concluded, "that one of the great London orchestras should visit these seaside places during July, August, and September, I only do so on the understanding that no such first-class orchestra already exists in the town. I have no wish to disturb the existing local orchestra; they could play for the remaining nine months of the year. But at all events the corporation should see that visitors have the best music that can be obtained for the period when their towns are crowded with visitors and holiday-makers—all spending a great deal of money. And the engaging of a London orchestra would not enter into the scheme of things at all, if the corporation had vision and understanding enough to keep in constant employment a proper small symphony orchestra all the year round; while it must be borne in mind that any local orchestra would deserve a couple of months' holiday annually, and that the residents would enthusiastically welcome a change of orchestra and a change of conductor. My remarks, in which I have constantly alluded to seaside resorts, apply equally to our spas. The story of music in the spas is not a happy one. Some spas which at one time had a good orchestra have fallen from grace. And in none of them is there anything comparable to the fine music that one can hear at several of the continental spas. If our British spas intend seriously to compete in attractiveness with their continental rivals, one or more of them should make a real attempt to show that British spas with British orchestras can equal them in this, as they can do in many other ways."

Mr. St. John Ervine followed with an amusing diatribe on the appreciation manifested by health resort populations, the residents, the visitors, and their friends of good drama. He once brought the Irish players, when at the zenith of their fame, to Buxton, and the kind of audience they got wanted to make him cruel to cripples. He thought that a health resort should not only provide good entertainments but that the inhabitants, especially the municipal authorities, should cultivate cheeriness, and he drew a fantastic picture of councillors in their robes and of lovely aldermen. But the serious message of his address was that a borough in providing amenities for visitors, sick or sound, should include among them the presentation of good drama.

Mr. L. du Garde Peach pleaded the right of young people to be amused when on holiday, and Alderman Harvey, Lord Mayor of Stoke, emphasised this opinion, adding that a large proportion of the population resented the perpetual presentation to them of films that were trashy and entertainments that were vulgar.

Mr. Bonnington, publicity manager, showed that his was a difficult task in dealing with many conflicting interests.

Modern Orthopædics

In the afternoon demonstrations were given of orthopædic methods employed at the Devonshire Hospital, when an interesting series of patients was seen undergoing various forms of manipulative treatment. A plaster bed for spondylitis was made in the presence of the company and the rapidity with which the process could be carried out by expert nurses was remarkable. Methods of taking and recording spinal tracings were shown, the treatment of knees after extension on the Balkan frame, and the different exercises accompanied with splinting to restore comfort, function, and appearance to crippled hands. Dr. L. S. Potter, Dr. L. C. Hill, Dr. C. W. Buckley, Dr. J. A. Hendry, and Dr. J. S. Charlton showed cases under treatment of Paget's disease, von Recklinghausen's disease, early spondylitis, and extreme osteoporosis in rheumatoid arthritis, and all these demonstrations left the firm impression that careful, advanced, and well-directed surgical and medical measures were being taken to counteract conditions and sequelæ in very painful and obstinate diseases.

CRIPPLED CHILDREN

A discussion followed upon the spa treatment of crippling diseases, especially in children. Dr. Buckley presided, and Dr. R. G. Gordon, physician at the Children's Hospital, Bath, opened the discussion. He said :—

"In rheumatic infections of childhood, which come under the general grouping of acute rheumatism, there is seldom if ever any lasting effect in the absence of secondary infection, and the term 'rheumatic' must not be held to be an inevitable indication for hydrotherapy, for in the acute and subacute stages of this infection hydrotherapy in my submission is contra-indicated. Still's disease does not differ from rheumatoid arthritis except that the reactions such as splenic and marked glandular enlargement are what may be regarded as characteristic of the *age* of the patient rather than of the nature of the disease process. In all cases of rheumatoid arthritis at any age in the acute and subacute stages, hydrotherapy of any kind must be used with the greatest care and circumspection, and the orthopædic maintenance of posture and general resistance of the patient are the features which require greatest attention. Acute and subacute fibrositis are now and then met with in children and young adults, and sometimes provoke difficulties in diagnosis with tuberculosis of the spine, especially in those cases of the latter disease of very insidious origin. In such cases of fibrositis hydrotherapy and its adjuvant therapeutic measures have a decided place, provided great care is taken that on any signs of retrogression in the condition of the patient a fresh search is made for tuberculous infection.

"In the orthopædic disorders of children external hydrotherapy has a wide field of usefulness, but I propose to confine myself to the hot pool bath and the consideration of certain physiological effects of this treatment. It is not always recognised that an artificial hyperpyrexia can easily be induced by a hot bath. Acting on the suggestion that hyperpyrexia induced by intravenous administration of T.A.B. was beneficial in chorea, I induced hyperpyrexia in some dozen cases by means of hot baths. There was a rise of temperature to 104° while in the bath at 108°, and the maintenance of a temperature for 2½ hours before it fell to normal. But while benefit was definite it was not maintained any better than with other methods of treatment, and in two cases excitement and violence almost amounting to mania was induced. But except for mild vomiting on two occasions I met with no signs of heat collapse. Immersion in the hot bath results in the hyperventilation of the lungs in an attempt to cool the body. The result of this is to produce a deficiency of carbon dioxide both in the arterial and venous blood and a consequent alkalosis amounting to a 0·09 rise in pH value. There is a transference of water to the blood from the tissues with a relative diminution of hæmoglobin. The purpose of this dilution is to fill the much dilated superficial vessels. Later there may be a concentration of blood due to the loss of water by sweat and urine. With the transference of the water from tissues to the blood there is also a transference of protein and salts, so that the serum becomes richer in these. It would appear that this increase of serum solids is derived from the muscles. Hot baths increase the sugar metabolism and therefore lower the blood-sugar by 9·45 per cent. on the average. The inorganic phosphorus content of the serum is increased by about 4·25 per cent., while the total serum calcium falls to the extent of 3·03 per cent. This latter alteration will result in an increased neuromuscular hyperexcitability as a consequence of hot baths which may in rare cases amount to an epileptiform convulsion or tetany. The type of bath which I prefer for the treatment of orthopædic disorders of childhood is the large pool bath as used at Buxton. We use these baths at Bath more particularly for anterior poliomyelitis in its later stages; neuritis and chronic arthritis; congenital dislocation of the hip; coxa plana, after the head is reasonably firm in the acetabulum and regeneration is well advanced; all types of spastic paralysis. The advantages claimed for the pool bath at temperatures varying between 95–104° are improvement of circulation; relaxation of spasm of the joints so that contractures, whether due to spasticity or even to fibrosis, may be stretched passively or actively; and relief of pain, so that manipulations can be carried out with a minimum of distress. The use of water overcomes the load of gravity at least to the extent of 95 per cent., as proved by Dr. Crowden's experiments."

Dr. Gordon concluded by reminding his hearers that while hydrotherapy is a potent weapon capable of inducing great benefits, it may inflict great harm, as there is scarcely any mechanism of the body which is not affected by it, and crippled children cannot be treated by rule of thumb.

The discussion was continued by Dr. A. H. Douthwaite, assistant physician, Guy's Hospital, and physician in charge of the massage department.

CRIPPLING OF RHEUMATIC ORIGIN

Dr. Douthwaite began by considering the precrippling stages of certain rheumatic conditions in relation to their suitability for physiotherapy. He said :—

"A pre-arthritic stage can be distinguished which particularly in the case of rheumatoid arthritis is characterised by general ill-health, loss of weight, disturbance of sugar metabolism in the direction of lowered tolerance, and the all-important defect of peripheral circulation. This was shown by the cold and clammy extremities, and by the appreciably lower temperature of the hands and feet as indicated by the skin thermometer. These cases were eminently suitable for spa treatment. The acute stage of rheumatism—e.g., sciatica or multiple joint involvement—was best treated at home. In the subacute stage, when the signs of local and general activity of the disease were subsiding, spa treatment was often of benefit in hastening recovery but had to be given with the utmost caution to prevent a relapse. In the stage of convalescence with or without contractures the treatment of patients in an institution equipped with all modern appliances of physiotherapy was to his mind an essential to success."

The speaker then considered the chief aims of spa treatment, which were he said :—

"1. Improvement of peripheral circulation, and most forms of hydro- and electro-therapy did, in fact, achieve this object. He suggested that some of the joint changes in typical rheumatoid arthritis might be directly referable to impaired capillary circulation, and drew attention to the similarity in appearance of the finger-joints in this affection and in a purely vascular disturbance such as Raynaud's disease. He referred also to some excellent results he had attained by treating rheumatoid subjects by means of infection with malaria. Six or seven bouts of fever with the associated flushing of the skin and sweating might restore movement to the stiffened small joints of the rheumatoid arthritic. The treatment should be reserved for the later stages when the active disease was dead or dying. The malaria could be stamped out with two 5-grain doses of Atebrin.

"2. Recovery of muscle bulk. It was clearly useless to restore movement to joints in the absence of muscles capable of their control. This could never be attained by massage, but success could be looked for from static contractions and exercises.

"3. Recovery of movements which has been limited by (*a*) loss of power in muscles; (*b*) loss of habit—a factor greatly underestimated; (*c*) adhesions and muscle contracture; (*d*) muscle spasm which though no doubt of importance in all joint diseases was often overlooked in osteoarthritis of the hip.

"4. Improvement in general condition."

Dr. Douthwaite concluded by saying that no physician with an interest in rheumatic diseases could afford to disregard the otherwise unobtainable facilities for treatment such as are presented by the English spas, and he hoped that the efficiency of their staffs would no longer be hampered by the complete lack of anything worthy of the name of amusement, which had unfortunately driven many patients in the past to foreign resorts.

MANIPULATIVE TREATMENT

Mr. Timbrell Fisher, surgeon to the Seamen's Hospital, Greenwich, and in charge of the special clinic of the Ministry of Pensions Hospital at Orpington, discussed in detail the manipulative treatment of stiffened joints under water, and continued :—

"The value of the various forms of baths in crippling conditions not only of children but of adults is amply clear. With regard to the possibilities of under-water manipulation, the effect of the hot water is to relieve pain and congestion, to relax muscular spasm, and relieve the patient to a great extent of the necessity of supporting the painful limb. The patient thus finds that he is able to carry out movements that were hitherto impossible owing to pain and muscular spasm. These movements must play an important part in the prevention of deformity, since limitation of movement, at first due to muscular spasm, is apt to be followed by the formation of adhesions or scar tissue. This newly formed connective tissue, which is such a potent cause of disability, may occur not only inside the joint but in the joint capsule, in peri-articular structures, and even in connexion with the muscles acting upon the joint. Active and assisted movements performed in the deep pool are particularly useful in those varieties of chronic rheumatic arthritis, whether of the rheumatoid or osteoarthritic types, in which movement is very painful and associated with considerable muscular spasm. Then in addition to the action of such baths in the prevention of deformity, we have been shown that they are of value in the treatment of developed deformity. When the limitation of movement due to muscular spasm is abolished, remaining limitation of movement is due either to scar tissue or may be actually osseous. When due to scar tissue, a forced movement of the joint, when the patient is conscious, is in nearly every case associated with a degree of pain and involuntary muscular spasm, dependent upon various factors, including the skill of the manipulator and the psychological reaction to pain. But even the keenest advocate of the method of under-water manipulation would doubtless admit that, like every method of therapy, it has its limitations. Careful manipulation under anæsthesia must be considered. As the result of many years experience of a series of cases that runs into four figures, it is my considered opinion that manipulation under anæsthesia is an exceedingly valuable procedure in carefully selected cases, and that a great deal of unnecessarily prolonged suffering and financial embarrassment is still caused to sufferers from various crippling disabilities because the great possibilities of manipulation under anæsthesia are not sufficiently realised. Manipulation under anæsthesia is of most benefit where the joints are stiff owing to the presence of traumatic adhesions. Many joints, for instance, develop a painful limitation of some movement after a severe sprain that has been followed by traumatic synovitis. Some cases appear to be a combination of sprain and infection—i.e., the sprain of the internal lateral ligament of the knee or at the site of origin of the common extensors of the wrist and fingers from the external epicondyle of the humerus which, particularly in a middle-aged person, obstinately resists treatment. I believe that in these cases infection has been superadded, and very active treatment, often profitably including manipulation, should be persisted in. Adhesions may occur not only after trauma or trauma with superadded infection, but may be encountered in the more chronic stages of many diseases of joints, as in streptococcal or gonococcal arthritis. A preliminary trial should usually be made of simpler forms of physical medicine such as those which have been so ably demonstrated to us, and it is only when these fail that *manipulation under anæsthesia has to be considered*."

Mr. Timbrell Fisher then outlined the types of case that should benefit by manipulative treatment, of which the most suitable were rheumatoid cases or those of the proliferative kind. In polyarticular cases, he said, no joint should be manipulated, but in many cases of the more chronic type with somewhat dense adhesions a valuable procedure was to correct deformity and increase the range of useful movement by a series of manipulations, between which every effort is made to consolidate the ground gained by the last manipulation and to restore the wasted and weakened musculature. The application of these methods to different types of arthritis of the wrist was described in detail. "Manipulation under an anæsthetic," he held, "was often of value in cases of the osteoarthritic or degenerative type of chronic arthritis associated with deformity or an interference with movement that seriously interferes with function, but it was obvious that the general condition of the patient must be seriously considered before having recourse to manipulation under anæsthesia. In many cases the age and general condition of the patient would rule out any possibility of this method of treatment, which should not be undertaken unless the orthopædic surgeon who performs the manipulation can personally supervise, at any rate, the first part of the after-treatment, often of equal importance to the manipulation."

HOSPITALITY

Throughout the visit of the B.H.R. Association to Buxton the opportunities for hospitality to guests were taken full advantage of by the residents. There were various informal receptions, pleasant drives were planned, and the corporation reserved seats for an excellent performance of "The Arcadians" at the Opera House on Saturday evening.

NEW HOSPITAL FOR LLANDUDNO.—An appeal was made last week for £50,000 to build a new hospital for the town. Six acres of land have been given and the new institution is to have 60 beds. The buildings will be designed to allow of extensions to provide 120 beds.

MEDICINE AND THE LAW

Deaths after HCN Fumigation

THE unfortunate deaths at Aldershot, following the fumigation of vermin-infested cottages with hydrocyanic acid gas, were noted in our columns last week (p. 1021). So valuable is this method of destroying rats and vermin that, in spite of the recent reminder of its dangers, prohibition of its use is inadvisable. It is not an ordinary disinfectant; it has no effect upon the plague bacillus, but it kills the rats and fleas which carry the bacillus. Apart from its aid to public health in destroying the louse, the bug, the flea, and the mosquito, its economic services are well established. Employed in 1886 as an insecticide to destroy the scale pests of citrus trees in the United States, its utility for this purpose spread from California and Florida to Australia, Japan, and South Africa. In 1898 it was applied to destroy vermin in the Cape Government Railway's sleeping carriages, in 1901 to free prison buildings at the Cape from the bed-bug. Experiments in 1909 having proved its lethal effect upon rats and fleas in India, it soon afterwards became an authorised fumigant under the Quarantine Regulations of the United States. Having cleared a German flour mill of weevils in 1917, it successfully attacked plague-infected rats in the granaries of Venice in 1919. It is now perhaps best known as a process for the deratisation of ships, but it has lately been employed to free houses from vermin on the London County Council building estates. Whether it works for public health or for commerce, its action is swift and efficient. In contrast with sulphur it involves neither danger of fire nor damage to paint, metal work, fittings, or cargoes. But the gas is fatal to human beings and its smell gives scant warning. It is too useful to prohibit, yet too risky to leave unregulated; and fuller consideration of the evidence at the Aldershot inquest shows that, in spite of ample warnings in text-books, the present law is quite inadequate to control its use. No Act of Parliament requires that the commercial use of cyanide by private firms as a fumigant shall be subject to any system of licensing. The Home Office has made no rules for cyanide fumigation as a dangerous trade. The Ministry of Health has apparently no power to prescribe by regulations the method of such fumigation or the precautions to be taken before men, women, and children are allowed to return to the premises which have been thus fumigated.

THE ALDERSHOT INQUIRY

Our brief account last week of the fatal incidents at Aldershot may be expanded to show the situation with which the law should deal. The health committee of the borough council sees a free demonstration by a private company of the undoubted potency of hydrogen cyanide in fumigating verminous dwellings. It ascertains that the process has been successfully applied by other local authorities. The committee is rightly satisfied of the merits of the method and recommends its adoption at a cost of £5 per house or £2 10s. where four or more houses are treated. The committee advises the council that it will be necessary either for alternative accommodation to be found for the tenants for one night, or for the bedding to be removed for steam disinfection and returned the same day. The council adopts the plan and the tenants vacate their cottages from 10 A.M. on April 11th till 10 A.M. next The fumigator, who has plenty of experience o work, puts on a gas-mask, enters the premises, distributes (on the floor or between mattresse otherwise) paper discs which have absorbed the he also sprays the cyanide in liquid form. He comes out, seals up the front doors and posts not At night he comes back, opens the doors, goe and collects all his discs, throws open all wind cupboards, and drawers. He uses some me of testing the atmosphere by means of blott paper dipped in a certain solution; he also r on his sense of smell. Satisfied that all is he takes the keys of the cottages to the office of sanitary inspector in an envelope inscribed "Ev thing O.K." The inspector receives the keys morning and allows the tenants to return to t homes as arranged. The fumigator has followed previously harmless and successful routine, and sanitary inspector believes him to be expert in own technique and has his message of assur of safety. No warning is given to the tena Witnesses from two of the cottages told the cor they detected no particularly suspicious od a witness from a third cottage said he notice nasty smell. Before breakfast-time next day children are dead and other occupants of the prem have narrowly escaped.

The warnings in the text-books against the r of hydrogen cyanide are in rather general te A detailed statement is to be found in a Mini of Health report[1] published in 1923 and wri by Dr. P. G. Stock and Dr. G. W. Mor Williams, who are in possession of special knowle and experience respectively of port sani administration and of military measures aga gas attacks. The report classifies accidents occurring during the generation of the gas, du actual fumigation, during subsequent ventilat and afterwards when the premises have b pronounced clear. In one case in 1915, descri by Dr. Benjamin Cohen,[2] a man who had o fumigated bug-infected rooms by pouring sulph acid on potassium cyanide and then rushing of the room and pulling the door behind h unfortunately reopened the door because he he the cry of a cat. He was found unconscious in fr of the door. In other cases employees have been moved quickly enough out of a ship when gas was being generated, or else unauthorised pers have entered premises under fumigation. In 1 we recorded an incident in Chicago[3] where a ba ment restaurant was being fumigated to dest cockroaches; an opening for a water-pipe was ov looked and the leakage of gas killed six people i second-floor room upstairs. The Aldershot inqu illustrates the risks of ignorance. Other examples h been given by H. Fühner[4] of Königsberg. He descri an occasion when 100 soldiers, whose clothes l been deloused by hydrogen cyanide, suffered fr poisoning within an hour of putting them on ag There were no deaths, but ten men lost consciousn The extent to which particular materials retain gas in their air spaces is a fit subject for furt research.

SUGGESTED PRECAUTIONS

A more recent report issued by the Ministry

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[1] Ministry of Health Reports on Public Health and Med Subjects. No. 19, Preliminary Report on the Use of Hydro Cyanide for Fumigation Purposes. 1923. H.M. Station Office.

[2] South African Med. Record, 1925, xiv., 35.

[3] THE LANCET, 1923, i., 762.

[4] Deut. Med. Woch., 1919, xlv., 847.

Health, on the Bed-bug,[5] suggests various precautions. Fumigation by hydrogen cyanide, it says, should be undertaken only by persons with full knowledge of the nature of the gas. A house must be kept empty till it is certified free from gas; if it is not completely detached, the houses on each side must also be kept vacant for about eight hours and be kept under observation by men trained to detect possible leakage of the fumigant. Dissipation is slow in cold weather and repeated tests may be necessary; it may even be proper to close and warm the rooms before testing afresh. Bedding, blankets, pillows, and stuffed furniture should be beaten in the open air before re-use. The Ministry's earlier report of 1923, already referred to, drew attention to the need of care in handling and storing solid cyanide, in washing receptacles wherein it has been contained, and in the avoidance of splashing. The substance is often sent out in square tins with circular openings and thus small amounts may remain as a source of danger. Residuals after fumigation must be regarded as poisonous. As much care is needed during subsequent ventilation as during actual fumigation. In work on ships conspicuous notices should be posted and a special flag is suggested. The vessel must be completely searched, a single gangway should be used, and a careful tally kept of persons who go aboard and come ashore. The fumigating gang should work from leeward to windward and from the top deck downwards; possible pockets of gas should be looked for and doubtless naval architects are bearing this point in mind in modern ship construction. Fumigators should work in pairs and the use of electric torches and of life-lines should not be forgotten. As the evidence at the Aldershot inquest showed, and as the text-books state, the sense of smell should not be relied upon. It is said that one of the quickest ways of detecting the gas in low dilutions is by the peculiar taste apparent when smoking. Self-contained oxygen breathing apparatus, if in perfect order and worn by a trained man, gives protection against the highest concentrations of gas likely to be encountered, but is cumbersome and heavy. The army type of "small box respirator," filled with a mixture of alkaline permanganate granules and activated charcoal, costs little, is light to carry, and requires no elaborate training; but the granules gradually become damp, and, after an aggregate use for about 24 hours, a new box must be fitted.

A person overcome by the fumes must be removed to the fresh air at once. In this connexion the Ministry's report deprecated attempts at rescue unless the rescuer is protected by a mask or can be hauled back to safety by a life-line. Neglect of precautions by the rescuer has, it seems, often added to the total of fatalities without effecting a rescue. Artificial respiration should be begun immediately. Prof. Barcroft has suggested the addition of carbon dioxide to stimulate the respiratory centre. A special inhaler, fitted with the Gibbs valve, has been used in New York for administrating oxygen containing 5 per cent. of CO_2; oxygen administered alone is of doubtful value. The authors of the Ministry's report of 1923 were told at the Quarantine Station at New York that the only remedy there found of any avail was artificial respiration with possibly hypodermic injections of camphor and the use of a galvanic battery. Fühner advises subcutaneous injection of 5 per cent. sodium hyposulphite up to 100 c.cm. or more; strychnine and caffeine, he thinks, merely increase the "cramps" without relief to the breathing.

The Aldershot case was one which should somehow have been prevented. The Ministry's report on the bed-bug expressly states that at present there is no statutory power to make regulations for the control of fumigation with cyanide or other poisonous gases. Here is something useful for Parliament to do.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

GLASGOW APPOINTMENTS COMMITTEE

THE value of the Glasgow University Appointments Committee was emphasised at last week's graduation ceremony by Sir Robert Rait, the vice-Chancellor and principal. In the year 1934–1935 only 27 of the 638, graduates failed to communicate with the committee and only 48 were known to be unemployed. A feature of the past year was the number of arts students who found openings in industry and commerce. The principal appealed to young graduates to keep in touch with the committee; this is particularly important in the case of medical graduates, since the work of the committee is of special value to the young doctor after he has had some post-graduate hospital experience. Many inquiries for assistants and possible partners reach the committee, and it is sometimes difficult to get suitably qualified men in time.

It is often said of universities that interest in the student ceases as soon as he graduates. Every effort, therefore, to overcome this reproach will be welcome. It is a deplorable fact that many students graduate in medicine with little knowledge of what their profession has to offer, and with even less knowledge of how to plan their career, and it is satisfactory to find that university authorities are alive to the importance of instructing their graduands how best to make use of the knowledge they have acquired.

An organisation such as the Edinburgh Graduates Association is of great value in keeping graduates in touch with their university. The Association sends to its members the well-produced *University Journal* which is published twice yearly. It not only informs its members of university happenings, but encourages the development of university clubs all over the world. It has assisted student activities, especially in the direction of encouraging athletics, and has been able to help students who, through no fault of their own, have found themselves in pecuniary difficulties. It has recently been suggested that a similar association should be formed in connexion with the University of Aberdeen.

EDINBURGH CHARITIES WEEK

Last week was charities week in Edinburgh. The energy, enthusiasm, and ingenuity of the students has been well maintained, and as the weather has been favourable, a large sum will have been collected for the local hospitals. Unfortunately the week has been marred by a fatal accident to a student performing at the students' carnival in the Waverley Market. His "side-show" consisted in diving through a hoop into a canvas bath. The latter contained only a few feet of water, and a slight error of judgment caused him to touch the hoop, so that instead of making the necessary flat dive, he fell more vertically and fractured his skull against the bottom of the bath. Further supervision of the carnival is surely necessary when such obviously dangerous stunts are practised.

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[5] Reports on Public Health and Medical Subjects, No. 72. Report on the Bed-bug. 1934. H.M. Stationery Office.

THE FIRST CHEMICAL SOCIETY

The Chemical Society of Philadelphia, founded in 1792, has been considered the first society of its kind in the world. Prof. James Kendall of Edinburgh University, however, has established the fact that a chemical society existed in Edinburgh in the year 1785. He suggests that the Philadelphia Society was the daughter of the one in Edinburgh, since the medical school of Philadelphia was instituted in 1765 under strong Edinburgh auspices.

PARLIAMENTARY INTELLIGENCE

HOUSE OF COMMONS

Reassembly after Easter

The House of Commons reassembled after the Easter adjournment on Monday, April 29th.

MONDAY, APRIL 29TH

Cleansing of Shell-fish

Mr. Oswald Lewis asked the Minister of Agriculture if, in the course of his inquiry as to the desirability of making an order for the compulsory cleansing of shell-fish before they were marketed, he would consider the propriety of exempting from the operation of such an order a fishery such as the Colchester oyster fishery where, owing to the situation of the beds and the set of the tides, pollution of the shell-fish was not possible.—Mr. Elliot replied: My right hon. friend, the Minister of Health, by whom regulations for the control of the sale of shell-fish for human consumption are made, will no doubt be guided by the evidence of pollution or of its absence. The inquiries which we are conducting are directed to this point. If my hon. friend will give me any evidence as to beds in which pollution is impossible, I shall be glad to examine it.

Aldershot Fumigation Deaths

Mr. Thorne asked the Minister of Health if he had received a copy of the jury's recommendation in connexion with the death of two children by cyanide poisoning after their home had been fumigated at Aldershot; if he was aware that the work was done by contract; if he would make it clear to all local authorities that such work should be carried out directly by the local authority; and whether the parents of the two deceased children had received any compensation from the Aldershot local authority.—Sir Hilton Young replied: The answer to the first two parts of the question is in the affirmative. I do not think that the suggestion made in the third part of the question, that the work of fumigation should be carried out directly by the local authority, would make for greater safety or efficiency. As regards the last part of the question, I understand that the question of compensation for the parents of the two deceased children is under consideration, and that allowances have been paid by the Aldershot Town Council to the tenants in respect of food and lodging for the period during which they were dispossessed of their houses.

Supply of Milk to School-children

Mr. McEntee asked the Parliamentary Secretary to the Board of Education the number of children being supplied with milk in all schools in the county of London, and the number being supplied free.—Mr. Ramsbotham replied: Complete returns are not yet available, but it appears from the information so far received that at the end of March about 365,000 children and young persons in grant-earning schools in the county of London were being supplied with milk, of whom about 26,700 were receiving milk free of charge.

Telephones in Rural Areas

Replying to Major Attlee, Sir Kingsley Wood, Postmaster-General, said: I think it will be recognised that the reductions which were introduced towards the end of last year were far-reaching in their scope, and they have largely contributed to an unprecedented telephone development in this country. There is, however, I believe still considerable scope for telephone expansion in our rural areas, which would also do much to assist our farmers and also others who live in remote areas of the country. We are now about to take steps which will aim at making the telephone available in rural and remote parts of the country as readily as it is in the cities and towns to-day. This must necessarily take time fully to accomplish, but as the first step I now propose to ensure, so far as practicable, that by the end of 1936 no village on the mainland of Great Britain and Northern Ireland, which has a post office, will be without a public telephone. This will mean an addition of over 1000 additional public telephone call offices in these parts of the country which have hitherto been unable to possess that easy and rapid communication which our telephone system affords to-day.

TUESDAY, APRIL 30TH

Coloured Men and Alleged "Rare Disease"

Captain A. Evans asked the Minister of Health if he had any information regarding the outbreak of a rare and complicated disease reported to have affected a number of coloured men in the Bute area of Cardiff, some of whom were engaged in the filming of "Sanders of the River," resulting in at least half a dozen deaths.—Mr. Shakespeare, Parliamentary Secretary to the Ministry of Health, replied: The answer is in the negative. Inquiries which have been made have failed to confirm the occurrence of any such outbreak as that referred to in the question. My right hon. friend is informed that only one coloured man has recently died in this area, and the cause of death was found after a post-mortem examination to be arterio-sclerosis and aortitis.

Constitution of Durham University

Mr. Martin asked the Parliamentary Secretary to the Board of Education whether he could announce the probable date of the appointment of commissioners to form a new constitution for Durham University.—Mr. Ramsbotham replied: The Government have decided to introduce early legislation to set up commissioners to prepare statutes in general accordance with the commission's recommendations.—Replying to a further question Mr. Ramsbotham said that it was hoped to introduce the Bill in the House of Lords before Whitsuntide.

Modern Churchmen's Union.—A week-end conference is being held by this union at Old Jordans Hostel, Beaconsfield, Bucks, from May 18th to 20th, the subject being psychology and life. The speakers will include the Rev. L. F. Browne, M.D., physician to the Institute of Medical Psychology (psychology and religious experience), and Dr. Burnett Rae (psychology and health). Particulars may be had from the organising secretary at the Church House, Westminster, London, S.W. 1.

Mock Trials.—A series of mock trials will be held at the London School of Economics, Aldwych, on Tuesdays from May 14th to June 25th at 5.30 P.M., in aid of King Edward's Hospital Fund for London. On May 14th Mr. Philip Guedella will prosecute the cinema for misappropriating history, while on May 21st the ballet will be arraigned on the charge of not planting their feet firmly on the ground. On May 28th Mr. St. John Ervine will accuse airmen of making the world too small. On June 4th the ancient Greeks must answer the charge of not knowing that they are dead, and on June 18th modern authors that of taking themselves too seriously. At the last trial on June 25th Mr. Punch has entrusted his defence for being unduly polite to Mr. E. V. Knox, his editor. The secretary of the fund may be addressed at 10, Old Jewry, London, E.C. 2.

PANEL AND CONTRACT PRACTICE

The Economy Deductions

ALONG with certain other classes of the community insurance doctors and chemists regain their standard remuneration on July 1st when, under Mr. Chamberlain's fourth Budget, the remaining half of the salaries cuts of 1931 is restored. The present is, perhaps, a convenient opportunity to indicate the effect of these cuts on the doctors. It will be remembered that the deduction took effect as from Oct. 1st, 1931, and was at the rate of 10 per cent. until July 1st, 1934, when it was reduced to 5 per cent. The actual amounts of the deductions suffered by practitioners are (1931) £165,826, (1932) £672,813, (1933) £675,318, (1934) £500,743, and upon the provisional determination of the fund for 1935 it is estimated that the 5 per cent. cut for the first six months will amount to just over £159,000. The total deductions therefore from insurance doctors, apart of course from the increased taxation to which they in common with the rest of the community have been subjected, will have amounted in round figures to £2,174,000 for England alone.

Medical Certification

Insurance doctors are sometimes asked for certificates which they are not properly called upon to issue. A case in point is that in which an insured person has been examined by a regional medical officer and reported not incapable of work. Sometimes the agent of the approved society tells the patient to obtain a final certificate from the insurance doctor, and says he cannot pay the balance of sickness benefit until the certificate has been produced. It may be that the insurance doctor does not agree with the R.M.O.'s report that the patient is not incapable of work, and in such cases it is clearly his duty, if asked by the patient, to continue to issue intermediate certificates unless and until he is satisfied that the patient is no longer incapacitated. But if the insurance doctor does not disagree with the R.M.O., and provided that the date of the examination falls within the period covered by an intermediate certificate already issued, it is not necessary for a further certificate to be issued. The Ministry of Health in August, 1934, intimated that approved societies have now been advised that where benefit is discontinued following upon a R.M.O.'s report that in his opinion the insured person is not incapable of work, they might reasonably regard the production of a declaring-off certificate as unnecessary, and that they should be prepared to pay benefit up to the date of the examination. If, in the circumstances indicated above, the payment of sickness benefit is refused, the insured person should be advised to consult the district inspector of the Ministry of Health.

Another point affecting certification which still gives rise to misunderstanding is the period covered by an intermediate certificate. No. 5 of the Medical Certification Rules provides that, if incapacity continues beyond eight days from the date of the first certificate, further intermediate certificates shall be given by the practitioner, if so desired by the insured person, week by week, during the continuance of incapacity, and for the purpose of the certification rules "week" means the period from midnight on one Sunday to midnight on the following Sunday. If, therefore, an intermediate certificate has been issued on a Monday in any week the next certificate may be issued at any time up to and including the following Sunday week.

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Here is another illustration of the intricacies of fever hospital administration. A hospital big enough for normal times may be half empty for long periods and yet be totally inadequate during the periodic waves of the zymotics. In Huddersfield spare beds in quiet times have been wisely used for advanced cases of tuberculosis, but their exclusion in recent years has complicated the administration of a sanatorium not meant for late cases. In other towns measles and whooping-cough are admitted to vacant wards, but these diseases do not always conveniently occur when scarlet fever and diphtheria are in the trough of their seasonal wave. Rigid selection of scarlet fever, a mild disease in its present form, may obviate overcrowding, and this is a policy which has been safely followed in some areas. It is apparently not favoured in Huddersfield, for in 1933, when pressure on the hospital beds was already acute, 806 cases were admitted, being 96·5 per cent. of all cases notified. It cannot be that the housing conditions of Huddersfield are worse than those of Glasgow, where home treatment on a considerable scale has proved practicable. Again, the possible future effect of immunisation, especially against diphtheria, must influence the deliberations of local authorities as to hospital extension. This prophylactic measure has been pressed forward in Huddersfield, and although the immunised population had not reached dimensions sufficient to affect the incidence by the end of 1933, over 4000 children had been dealt with, among whom only two had contracted diphtheria, and that before the necessary time to develop the maximum immunity had elapsed. While additional beds at isolation hospitals are certain to prove useful for the treatment of measles, whooping-cough, pneumonia, acute rheumatism, and other acute diseases, and the demand for institutional treatment is certain to increase, it may be well to anticipate a great fall in the incidence of diphtheria and in the need to admit scarlet fever cases, as the people become more enlightened in their views, and as housing conditions improve.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 20TH, 1935

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 0; scarlet fever, 2007; diphtheria, 1072; enteric fever, 25; acute pneumonia (primary or influenzal), 1361; puerperal fever, 53; puerperal pyrexia, 79; cerebro-spinal fever, 26; acute poliomyelitis, 2; acute polio-encephalitis, 2; encephalitis lethargica, 3; dysentery, 18; ophthalmia neonatorum, 77. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 27th was 3546, which included: Scarlet fever, 1057; diphtheria, 1517; measles, 27; whooping-cough, 399; puerperal fever, 18 mothers (plus 3 babies); encephalitis lethargica, 269; poliomyelitis, 2. At St. Margaret's Hospital there were 15 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London. there was no death from small-pox or enteric fever, 29(1) from measles, 10 (1) from scarlet fever, 29 (1) from whooping-cough, 32 (3) from diphtheria, 44 (14) from diarrhœa and enteritis under two years, and 167 (23) from influenza. The figures in parentheses are those for London itself.

The number of influenzal deaths is on the wane. This week deaths were reported from 62 great towns, Manchester reporting 21, Leeds, 9, Liverpool and Birmingham each 6, Portsmouth 5, Middlesbrough, Salford, and Sunderland each 4. (During the same week Glasgow reported 8 deaths, Edinburgh 1.) Five fatal cases of measles occurred at Wigan, 3 at Chester. Liverpool reported 4 deaths from whooping-cough, Manchester and Middlesbrough each 3. West Ham and Liverpool each had 3 fatal cases of diphtheria, no other great town more than 2.

The number of stillbirths notified during the week was 283 (corresponding to a rate of 47 per 1000 total births), including 42 in London.

CORRESPONDENCE

SALT LOSS AS A CAUSE OF ILL-HEALTH

To the Editor of THE LANCET

SIR,—I was much interested in Colonel McEwen's letter in your last issue; it fills in a curious gap in our knowledge. A rather severer form of the condition he calls attention to has been described by various workers in tropical climates as affecting Europeans there, under the label "functional hypoadrenalism." Some of the cases were helped by cortical extract. Now we know that Addison's disease is accompanied by a great excretion of sodium chloride, and can be symptomatically alleviated by giving this salt. We can understand why these tropical cases simulate some of the symptoms of Addison's disease. No doubt cortical extract may diminish the loss of salt in these patients, but giving salt as Colonel McEwen suggests is both more rational and much more economical. Moreover, his observation explains the achlorhydria which has been found in the type of case to which I am alluding. Salt deprivation is known to diminish the formation of hydrochloric acid. Incidentally, should not all this diminish the zest still displayed in some quarters for prescribing a salt-free diet? The grounds on which Widal recommended this in the treatment of œdema have been abundantly disproved, and Colonel McEwen's observations suggest that this method is inadvisable in asthenic states generally.

I am, Sir, yours faithfully,

W. LANGDON-BROWN.

Cambridge, April 29th.

THE PROBLEM OF DIPHTHERIA

To the Editor of THE LANCET

SIR,—There is so much common ground between myself and Surgeon-Captain Dudley that there is little room for controversy. Nevertheless, his letter in your issue of April 13th (p. 902) leaves certain issues open. The main points of my letter of March 23rd were twofold. First as to any certainty or even probability of an increase in the numbers of carriers following inoculation against diphtheria. There has been a tendency to regard the experiences of the Greenwich Hospital School as if they constituted a crucial experiment. I think that Surgeon-Captain Dudley and his co-investigators will agree that they cannot be so interpreted. The comparison of the incidence of carriers in the school before and after inoculation (in 1928) is, in my opinion, vitiated by three points of difference:—

(1) The certain presence of a *gravis* infection in the third term of 1932 when 1296 boys were swabbed in a 10·9 per cent. of swabs were positive; it was inferred that *gravis* types were present in the school before inoculation but this must be regarded as uncertain. The report itself states (p. 31) that the outbreak in the third term of 1932 "cointided with the introduction of the Leeds serological type of '*gravis*' bacilli into the school." Incidentally the large proportion that the large number of swabs taken in this third term bears to the total "after inoculation" swabs—1276 out of 6354—overweights the total. The comparisons would only be just if the swabs had been taken at a steady rate throughout the whole of the period of observation—probably an impracticable ideal.

(2) The much higher proportion of virulent diphtheria

PANEL AND CONTRACT PRACTICE

The Economy Deductions

ALONG with certain other classes of the community insurance doctors and chemists regain their standard remuneration on July 1st when, under Mr. Chamberlain's fourth Budget, the remaining half of the salaries cuts of 1931 is restored. The present is, perhaps, a convenient opportunity to indicate the effect of these cuts on the doctors. It will be remembered that the deduction took effect as from Oct. 1st, 1931, and was at the rate of 10 per cent. until July 1st, 1934, when it was reduced to 5 per cent. The actual amounts of the deductions suffered by practitioners are (1931) £165,826, (1932) £672,813, (1933) £675,318, (1934) £500,743, and upon the provisional determination of the fund for 1935 it is estimated that the 5 per cent. cut for the first six months will amount to just over £159,000. The total deductions therefore from insurance doctors, apart of course from the increased taxation to which they in common with the rest of the community have been subjected, will have amounted in round figures to £2,174,000 for England alone.

Medical Certification

Insurance doctors are sometimes asked for certificates which they are not properly called upon to issue. A case in point is that in which an insured person has been examined by a regional medical officer and reported not incapable of work. Sometimes the agent of the approved society tells the patient to obtain a final certificate from the insurance doctor, and says he cannot pay the balance of sickness benefit until the certificate has been produced. It may be that the insurance doctor does not agree with the R.M.O.'s report that the patient is not incapable of work, and in such cases it is clearly his duty, if asked by the patient, to continue to issue intermediate certificates unless and until he is satisfied that the patient is no longer incapacitated. But if the insurance doctor does not disagree with the R.M.O., and provided that the date of the examination falls within the period covered by an intermediate certificate already issued, it is not necessary for a further certificate to be issued. The Ministry of Health in August, 1934, intimated that approved societies have now been advised that where benefit is discontinued following upon a R.M.O.'s report that in his opinion the insured person is not incapable of work, they might reasonably regard the production of a declaring-off certificate as unnecessary, and that they should be prepared to pay benefit up to the date of the examination. If, in the circumstances indicated above, the payment of sickness benefit is refused, the insured person should be advised to consult the district inspector of the Ministry of Health.

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1929, ii., 363) in the seborrhœic state and for those who are subject to repeated colds or to chronic nasopharyngeal catarrh. Until I had read Földes's work I did not realise that the same dietetic principles might be indicated in allergic conditions; in fact, I had wrongly advised to the contrary.

The rationale of the antiretentional dietary is based on the fact that excess of carbohydrates and of fats causes retention of water and minerals, whereas proteins and nucleoproteids in particular have the opposite effect. Such a dietary is similar to that advocated by Czerny in the exudative diathesis, and by Minot and Murphy in pernicious anæmia. Briefly, it contains a relatively high proportion of proteins and foods containing nucleoproteins, whereas the intake of carbohydrates and fats is restricted, as also is that of fluid and salt. No ill-effects result from a high protein consumption, *provided that there is adequate restriction of carbohydrates and fats*. I am convinced that the modern fashion of advising the administration of large quantities of carbohydrates to children is wrong: it predisposes to the "watery" condition of the mucous membranes which renders the subject susceptible to the colds and chronic nasopharyngeal infections that Dr. Paterson considers to be the commonest provoking factors in cyclical vomiting.

As an example of the remarkable effects of an antiretentional diet the following case may be cited.

A boy of 15 was referred to my out-patient department by one of my colleagues last summer for a recurrent impetiginous anterior rhinitis, which nearly always resulted from his frequent colds. He was subject to repeated asthmatic attacks, and had so-called functional albuminuria. His mother stated that the boy consumed large quantities of sweets, jam, pudding, cake, and bread: his intake of fat was probably also excessive. I advised a strict antiretentional diet, which the mother promised to enforce. A fortnight later I saw the boy again. His rhinitis and chronic catarrh had cleared up, the albuminuria had disappeared, and his mother was astonished at the improvement in his general health. Since that time he has had no colds and has been entirely free from asthma, except at Christmas when his mother allowed him to relax his diet. He then promptly "caught a cold" and had several asthmatic attacks. Since resuming the diet he has been perfectly well.

While agreeing with Dr. Paterson that acute infections or chronic foci of infection predispose to the attacks of cyclical vomiting and allied symptoms in those who are constitutionally subject to them, my contention is that a predisposition to catarrhal infection, with the inevitable lymphoid hyperplasia that results from it, is dependent on a faulty diet which tends to cause fluid retention.

I am, Sir, yours faithfully,

H. W. BARBER.

Devonshire-place, W., April 23rd.

To the Editor of THE LANCET

SIR,—Dr. Donald Paterson has obviously performed a useful action in warning against the dangers of accepting evidence of ketosis as a complete diagnosis. The clinical diagnosis "acidosis attack" can only be reached fairly by a process of exclusion of all infective cause. But when this has been done—and after vomiting and dehydration I do not look upon pyrexia only as sufficient evidence of infection—I am convinced that there remains a large group which Dr. Paterson, perhaps in his anxiety to avoid mis-diagnosis, of the admittedly much larger infective group, glossed over very scantly. I refer to the children who produce an attack repeatedly under the influence of excitement—e.g., a visit to the Zoo, a theatre, or a party, or by over-exertion, or by riding in some vehicle. They may of course themselves not infrequently be really acidotic with an infection, but the common attacks of the group of children of which I am speaking will again and again baffle the attempts to find an infective origin.

My point is this: Just as I entirely agree that infective acidosis is very common and demands no treatment between infections, I do plead that Dr. Paterson does not swing us to the other extreme and discourage treatment by higher carbohydrates and moderate restriction of fats of the child who has these frequent distressing and annoying periods of vomiting. Dr. Paterson implies that the result of such treatment has been severe dental decay: the extra carbohydrate need not be given as cereals. He also speaks as though malnutrition had resulted, but could he guarantee to fatten many of the children of the type in question? Surely he is being too hard on the dietetic modification which really need only consist in the addition of a tablespoonful of glucose powder four times a day apart from meals, and the subtraction from the normal diet of chocolate, meat fats, and cream. It is interesting that the children of the non-infective "acidotic attack" type are very commonly constant fat refusers, as has been pointed out by Dr. H. C. Cameron, and seem much fitter if their natural dislike is allowed.

Admittedly the attacks are rarely severe enough to justify admission to hospital, thereby somewhat modifying the statistical value implied in Dr. Paterson's statement of the admission rate at Great Ormond-street; but the relief and satisfaction of the parents, let alone of the children, at the control of the attack is justification enough for continuous treatment in the group to which I have confined this letter.

Matters of value in medicine frequently excite the return of the swing of the pendulum by their too enthusiastic application to an unjustifiably wide range of conditions. It is to be hoped that the usefulness of the dietetic modifications associated particularly with Dr. H. C. Cameron's name be not lost sight of as a result of the mistakes of his followers.—I am, Sir, yours faithfully,

F. HARWOOD STEVENSON.

Edgware, Middlesex, April 29th.

THE KNEE-JERK IN PNEUMONIA

To the Editor of THE LANCET

SIR,—I trust I have not misunderstood Dr. Stoddart's reference to the state of the knee-jerk in lobar pneumonia in his letter in which he so eloquently extols the genius of Hughlings Jackson. But the relationship to the anatomy of the spinal cord in the rabbit would not puzzle me so much if the knee-jerk were invariably abolished in lobar pneumonia—which, of course, is very far from the case. I was stimulated to pay special attention to this feature through a clinical lecture by the late Samuel West, who mentioned that abolition of the knee-jerk might be a valuable diagnostic aid in distinguishing acute thoracic disease from acute abdominal conditions. During the late war the concentration of material upon a very large scale afforded an opportunity for intensive investigation. The state of the knee-jerks was noted at all stages of the 558 cases of lobar pneumonia which came under my care, and since the war the series has been extended to approximately one thousand with the following results.

The knee-jerks were abolished (in the early days of the illness) in 23·7 per cent. cases. They were feebly elicited bacilli (T.C.D.) isolated from swabs showing morphological diphtheria bacilli (i.e., the total of both virulent and avirulent bacilli) after inoculation than before (Table IIIA, p. 41 of the report) and especially during the years 1930 to 1933, is a factor which cannot be overlooked. As shown by the report, the true proportion of virulent diphtheria bacilli before inoculation is a matter of inference.

(3) The use of a chocolate tellurite medium in 1932–33 for the isolation of colonies. H. J. Parish has pointed out (see THE LANCET, 1934, ii., 1192), and this is confirmed by Prof. Hedley Wright, that the use of this medium considerably increases the proportion of positive results—possibly by 25 per cent.

Valuable as the experience of the school is, I consider that it cannot be regarded as the basis of a belief that carrier-rates are increased following upon immunisation. The Liverpool evidence to the contrary is far from complete but is suggestive; thus in one school of 200–300 children a considerable number of swabs taken some years after the completion of inoculation were all negative.

On the other hand the evidence that *gravis* infections give rise to very high carrier-rates is very strong. A recent experience in a 48-bedded scarlet fever block showed an incidence of 25 carriers of virulent organisms among 45 swabbed; the children in one of the two wards were almost all carriers, whether inoculated or not and whether Schick-positive or not. Only one case of diphtheria arose; the source of infection was probably a nasal case as has so often been our experience. This gives a total carrier-rate of 55 per cent., a figure even higher than those quoted by Surgeon-Captain Dudley. This outbreak of carriers, which I hope will shortly be published, emphasises the second point of my letter of March 23rd—namely, that there is much evidence that carriers are less common sources of infection of cases than are the cases themselves.

I am, Sir, yours faithfully,

Liverpool, April 25th. C. O. STALLYBRASS.

CONTINUOUS DRIP BLOOD TRANSFUSION

To the Editor of THE LANCET

SIR,—I have read with great interest the article by Dr. Marriott and Dr. Kekwick in THE LANCET of to-day. In the position of house surgeon I have seen the almost miraculous results of continuous drip intravenous infusion of glucose-saline, and at that time wondered why my chiefs had not the foresight to employ whole blood in doses calculated to increase the hæmoglobin percentage to an appreciable extent.

Two points in technique have seemed to me of practical value. At the Royal Southern Hospital, Liverpool, a very neat reservoir is employed for the solutions infused. It consists of a vacuum flask, which may be of any size, with an inverted U-tube fixed to the outer cover, one end dipping into the interior, and the other end terminating in a tap and nozzle. A rubber bulb communicates by a side tube with the top of the U-tube to set the syphon in action. Another detail of even greater use is the drip bulb. The air in the upper part of the bulb tends in a little time to become absorbed by the fluid, until the level of the fluid rises up to the nozzle and the rate of flow can no longer be controlled. This is best countered by a side tube attached to the upper portion of the drip chamber and closed by a tap, a second tap of course controlling the rate of flow proximal to the nozzle. When the fluid level rises too high the flow must be turned off at the upper tap and the side tap opened to allow the fluid to fall to the requisite level.

I heartily agree with the open method of approach to the vein recommended. Plain needles and more specialised needles can be inserted by skin puncture—in expert hands. But even these hands occasionally fail to reach the vein on the first attempt, and repeated attempts in an unanæsthetised—and usually desperately ill—patient are acutely distressing if not dangerous. Moreover, the intima of the vein is so easily traumatised by a pointed object in its lumen that the subsequent infusion may be very slow or may even cease altogether.

No reference was made in the article to the reactionary rigors and even more dangerous constitutional signs which rarely accompany even the relatively minute dosage commonly employed in transfusions. It would be very interesting to hear the divergent views on the question of increased risk with this otherwise more rational dosage. I feel that in transfusion the surgeon has a most potent weapon with a wide and ever-widening range of usefulness.

I am, Sir, yours faithfully,

Liverpool, April 26th. J. GARNETT SHELDON.

SO-CALLED ACIDOSIS ATTACKS

To the Editor of THE LANCET

SIR,—Dr. Paterson's article will, I hope, evoke the discussion that it deserves. The problem at issue is, I believe, really more complicated than is envisaged by him and the authors from whose writings he quotes. I am in agreement with him that a disturbance of hepatic function is immediately responsible for the symptoms of cyclical vomiting, and that such a disturbance occurs also in many so-called allergic conditions, such as migraine, urticaria, angioneurotic œdema, certain forms of eczema, the eczema-prurigo syndrome of Besnier, and in some cases of asthma. This was clearly shown by Oriel in your own columns (1928, ii., 1009, 1064), and can be confirmed by anyone who will collect specimens of urine at different times throughout the 24 hours from a patient during an active period of his symptoms. In a characteristic case it will be found that in the period preceding the active paroxysm and during its early stages the urine is scanty, concentrated, highly acid, loaded with urates, and contains an excess of urobilin and a diminished quantity of chloride; after the paroxysm there is a diuresis, the urine becoming dilute and neutral or even alkaline, and the retained chloride is excreted. This phenomenon illustrates the futility of examining one specimen of urine in these cases.

It will be observed that in the condition under discussion, as well as in many others such as gout, there is preceding and during the period of active symptoms retention of fluid and mineral salts, particularly sodium chloride, and that in the post-paroxysmal period the retained fluid and minerals are excreted. The mobilisation and localisation of the retained fluid determine the particular symptoms or group of symptoms to which a given patient is liable. Thus in urticaria mobilisation of fluid occurs in the dermis, in angioneurotic œdema in the subcutaneous tissue, in eczema and prurigo in the epidermis and papillæ, in migraine and probably in epilepsy in the brain, and so on. This conception, which has been fully discussed in all its aspects by E. Földes (A New Approach to Dietetic Therapy, Boston, 1933), is of great practical importance because, no matter what the factors leading to retention may be in the individual case, one can control the tendency to a great extent by dietetic measures. The antiretentional type of dietary, advocated by Földes, corresponds closely with that which I have for many years advised (THE LANCET,

OBITUARY

SIR RICHARD STAWELL, K.B.E., M.D.Melb.

WE briefly announced last week the death in his seventy-second year of Sir Richard Stawell, almost on the eve of the annual meeting of the British Medical Association at which he was to preside. The son of Sir William Foster Stawell, chief justice of Victoria, Richard Rawdon Stawell was born in Melbourne and spent the whole of his life there, except for a brief period when he was sent to England to be educated at Marlborough. He came of well-established Irish stock, for his grandfather was Jonas Stawell of Old Court in the county of Cork, who married the daughter of William Foster, bishop of Clogher. He took his first medical qualification in 1887 from Trinity College, Melbourne, and after holding resident posts did further study in Europe and America, obtaining the D.P.H. in 1891. Shortly after his return to Victoria he was appointed to the Melbourne Children's Hospital and remained for 17 years an active member of the staff. The year 1902 began his association with the Melbourne Hospital and this lasted more than 20 years, for the greater part of which he was a member of the management committee and chairman of the house committee. After reaching the retiring age he was elected president of the hospital. To him was largely due the inauguration of systematic clinical teaching at the hospital, and one of his colleagues has put on record his appreciation of Stawell's supreme devotion to the cause of medical teaching, sparing neither time nor energy to further his object. He was a born teacher and the scientific grounding in physical signs and in neurological diagnosis which he gave his students was something never to be forgotten. Although often smarting from some well-merited rebuke, the recipient ultimately came to regard this apparently austere clinician with feelings of real affection. The idea of an Australasian Association of Physicians arose in Melbourne, and it was Stawell's aim that this body should run on lines similar to those of the sister association in this country. He was himself elected its first president. During the war he served with the third Australian General Hospital with the rank of lieutenant-colonel A.A.M.S., and became later a member of the medical advisory committee to the repatriation department of the Commonwealth. In 1929 he was created K.B.E. Sir Richard Stawell married in 1908 and leaves three children, a son and two daughters.

HUMPHRY JOHN WHEELER, M.D.Durh.

Dr. Wheeler, who died in London on April 2nd, was born in 1865 at High Wycombe, the only child by his second marriage of the late Mr. Thomas Wheeler, a banker and brewer in that town. The family was an old-established one which had done much by fostering the chair-making industry to raise the town to its present position in the industrial world. Dr. Wheeler received his medical education at St. George's Hospital and the Durham medical school at Newcastle-upon-Tyne, qualifying with the double English diploma and the M.B. Durh. in 1887. He was house surgeon at St. George's and proceeded to the M.D. Durh. in 1889. After a period of post-graduate work in Paris he returned to his native town where he practised for over 30 years, retiring in 1913. In the following year, on the outbreak of war, he joined the 13th London Regiment (territorial) as medical officer and at the conclusion of hostilities received for a further nine years an appointment under the Ministry of Pensions. He was consulting medical officer to the High Wycombe War Memorial Hospital. Dr. Wheeler married in 1892 Augusta, the eldest daughter of the late Mr. G. D. Bushe, of the Four Courts, Dublin, who survives him, with one daughter who is married to Squadron Leader F. R. Alford, M.C., R.A.F.

FRANK WINSON RAMSAY, M.D., M.S. Durh., F.R.C.S. Edin.

Mr. F. W. Ramsay, who died at Bournemouth on April 25th in his 73rd year, was educated at Aske Grammar School and at Montmorency, near Paris. He studied medicine at Newcastle-upon-Tyne, and while a student captained the Durham University football club and the Northumberland Rugby football team. He was tall, with exceptional physique and great physical strength. After qualifying in 1886 he was resident medical and surgical assistant at Newcastle Royal Infirmary, and next year started practice at Winton, near Bournemouth. He took the D.P.H. and became medical officer of health. His public work at Winton included the chairmanship of the Parish Council, membership of the Hampshire County Council, and of the Board of Guardians. He also held the office (now extinct) of way warden and was major in the 4th (Volunteer) Hants Regiment which he was asked to command. In 1893, after taking the M.S. Durh. with 1st class honours, and the F.R.C.S.Edin., he was appointed hon. surgeon to Victoria Hospital, Bournemouth, and gradually as his surgical work increased he gave up general practice and devoted himself to surgery alone. His active association with the hospital lasted 32 years, and four years ago he became chairman of the board of management, a post which he held until his death. He was also at various times surgeon to the St. Mary's Home for Invalid Ladies, the National Sanatorium for Diseases of the Chest, the Children's Hospital, Swanage, and a number of cottage hospitals in the neighbourhood. During the war he was in charge of a hospital at St. Malo. When the British Medical Association proposed to meet at Bournemouth in 1934 it was natural that he should be asked to preside, but before the meeting was held he decided that his health was not good enough for such a strain.

[*Photograph by Debenham and Gould*

MR. F. W. RAMSAY

A colleague who first met him just after he had realised his ambition to begin surgical work in what was then a small country hospital says that Ramsay held the same ideals right through his great surgical activities. The surgeon of even such a small hospital ought, he held, to be fully prepared to deal with every sort of surgical emergency that might occur in 12·5 per cent. cases. They were present to a degree which might be described as normal in 45 per cent. cases, and in 18·8 per cent. they were distinctly exaggerated.

It is clear, therefore, that whilst an absent knee-jerk might just turn the scale in favour of diagnosing a thoracic lesion, its presence will certainly not exclude pneumonia.

To whom is the credit due for identifying the occasional temporary abolition of the knee-jerk in pneumonia? Was it in fact Hughlings Jackson? Incidentally, one cannot help supposing that the original observation must have been at a time when it was not customary to employ the now familiar "hammer" without which a considerable number of sluggish and even normal knee-jerks might be overlooked.—I am, Sir, yours faithfully,

Brook-street, W., April 27th. ADOLPHE ABRAHAMS.

MATERNAL MORTALITY

To the Editor of THE LANCET

SIR,—I read with interest Mr. Eardley Holland's paper on maternal mortality, and I do not think his scheme of drafting specially trained men into general practice is a good one for the following reasons:—

(1) For an obstetrician to be sufficiently skilful to deal with serious complications he must be constantly handling abnormal cases. This he could not do if he were in general practice. (2) A man specially trained in obstetrics and possessing a diploma of the British College of Obstetricians and Gynæcologists will consider himself a specialist, and will probably have more confidence than his skill and experience justifies. He will be loth to call in a consultant, and his patients, knowing his qualifications, will not expect him to do so. (3) These men, having spent their early graduate years at obstetrics, will probably have an indifferent knowledge of medicine and surgery, the practice of which constitutes 80–90 per cent. of a practitioner's work.

In our endeavour to reduce maternal mortality we must not lose sight of the fact that it is just as great a tragedy for a young person to die as a result of an undiagnosed empyema or abdominal emergency as it is for a woman to die in childbirth. I think the appointment in each area of really good obstetrical consultants, who could be called upon to deliver or advise upon difficult cases, would greatly raise the standard of midwifery. The educational value to the practitioner would be considerable, and the public would expect a consultant to be called if conditions became complicated, just as they expect a surgeon to be called when serious surgical conditions arise. I am, Sir, yours faithfully,

Cheadle Hulme, April 29th. NICHOLAS CRAIG.

DOSAGE OF ASCORBIC ACID

To the Editor of THE LANCET

SIR,—I should be glad if you would allow me to correct a misstatement in your otherwise excellent annotation (p. 999). In my letter which you published on March 23rd I credited Dr. Bell with being the first to publish a case of infantile scurvy treated with synthetic vitamin C, but did not wish to imply that I had also used a synthetic preparation. My experience has been confined to ascorbic acid isolated from natural sources, as regards the treatment of both scurvy and cœliac disease.

I am, Sir, yours faithfully,

London, W., April 28th. WILFRID SHELDON.

THE WORD INSULIN

To the Editor of THE LANCET

SIR,—Having read with great interest the obituary notice of Sir Edward Sharpey-Schafer in your issue of April 6th I think that it might interest your readers to be reminded that it was Sharpey-Schafer who first made the name "insuline" generally accepted as designation for the autacoid of the islet tissue (the "Endocrine Organs," 1916, p. 128). The name had been suggested before by J. de Meyer of Brussels in 1909, and was adopted in 1922 by Banting and Best when they had succeeded in perfecting the method of pancreas extraction to such a degree that insulin could be used in practice. But Sharpey-Schafer tells us, in a footnote to the 1925 edition of his book, he had not seen de Meyer's suggestion when he made his.

I am, Sir, yours faithfully,

F. W. FORNET,

April 19th. Institute of Microbiology, Saarbruecken.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. S. K. Foster to *Pegasus*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Cmdr. G. F. Abercrombie to *Barham*.

Surg. Lt. J. O. Clyde promoted to Surg. Lt.-Cmdr.

Surg. Lt. J. F. Corr transferred from List 1 of Mersey Divn. to List 2 of Severn Divn.

Surg. Lts. D. M. Dean to *Furious*, and C. M. Lamont to *Drake* for R.N. Hospital, Plymouth.

ROYAL ARMY MEDICAL CORPS

Short Service Commissions: The undermentioned Lts. (on prob.) are restd. to the estabt.: I. U. Young, A. MacLennan, and J. O'Connell.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt. J. A. Brocklebank, from Supp. Res. of Off., R. Signals, to be Capt.

TERRITORIAL ARMY

Capt. N. Moulson resigns his commn.

W. N. S. Donaldson to be Lt.

ROYAL AIR FORCE

Flight Lt. T. D. L. Bolan is granted a permanent commission in this rank.

RESERVE OF AIR FORCE OFFICERS

Flight Lt. J. E. Foran relinquishes his commission on completion of service.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: E. C. A. Smith, A. Y. Dabholkar, M.C., K. S. Master, M.C., S. R. Prall, R. N. Khosla, S. A. McSwiney, and H. S. Rajan.

The undermentioned officers retire: Lt.-Cols. J. McG. Skinner and J. B. Lapsley, M.C.

DEATHS IN THE SERVICES

The death occurred at Southsea on April 30th of Colonel Richard Jennings, C.B.E., M.D., late A.M.S. He was born in January, 1856, and was educated at the Royal University of Ireland, qualifying M.D., M.Ch. R.U.I. in 1878. He entered the Army as a surgeon in February, 1881, became Major in 1893, Lt.-Col. in 1901, Colonel in December, 1908, and retired in January, 1913. He took part in the South African War 1900–1902, was twice mentioned in despatches, and was awarded the Queen's medal with three clasps and the King's medal with two clasps. In 1911 he was appointed K.H.S., and in 1919 was created C.B.E. (Mil.). He married in 1898 Mabel (d. 1919), daughter of Mr. J. Borthwick Paterson.

OBITUARY

SIR RICHARD STAWELL, K.B.E., M.D.Melb.

We briefly announced last week the death in his seventy-second year of Sir Richard Stawell, almost on the eve of the annual meeting of the British Medical Association at which he was to preside. The son of Sir William Foster Stawell, chief justice of Victoria, Richard Rawdon Stawell was born in Melbourne and spent the whole of his life there, except for a brief period when he was sent to England to be educated at Marlborough. He came of well-established Irish stock, for his grandfather was Jonas Stawell of Old Court in the county of Cork, who married the daughter of William Foster, bishop of Clogher. He took his first medical qualification in 1887 from Trinity College, Melbourne, and after holding resident posts did further study in Europe and America, obtaining the D.P.H. in 1891. Shortly after his return to Victoria he was appointed to the Melbourne Children's Hospital and remained for 17 years an active member of the staff. The year 1902 began his association with the Melbourne Hospital and this lasted more than 20 years, for the greater part of which he was a member of the management committee and chairman of the house committee. After reaching the retiring age he was elected president of the hospital. To him was largely due the inauguration of systematic clinical teaching at the hospital, and one of his colleagues has put on record his appreciation of Stawell's supreme devotion to the cause of medical teaching, sparing neither time nor energy to further his object. He was a born teacher and the scientific grounding in physical signs and in neurological diagnosis which he gave his students was something never to be forgotten. Although often smarting from some well-merited rebuke, the recipient ultimately came to regard this apparently austere clinician with feelings of real affection. The idea of an Australasian Association of Physicians arose in Melbourne, and it was Stawell's aim that this body should run on lines similar to those of the sister association in this country. He was himself elected its first president. During the war he served with the third Australian General Hospital with the rank of lieutenant-colonel A.A.M.S., and became later a member of the medical advisory committee to the repatriation department of the Commonwealth. In 1929 he was created K.B.E. Sir Richard Stawell married in 1908 and leaves three children, a son and two daughters.

HUMPHRY JOHN WHEELER, M.D.Durh.

Dr. Wheeler, who died in London on April 2nd, was born in 1865 at High Wycombe, the only child by his second marriage of the late Mr. Thomas Wheeler, a banker and brewer in that town. The family was an old-established one which had done much by fostering the chair-making industry to raise the town to its present position in the industrial world. Dr. Wheeler received his medical education at St. George's Hospital and the Durham medical school at Newcastle-upon-Tyne, qualifying with the double English diploma and the M.B. Durh. in 1887. He was house surgeon at St. George's and proceeded to the M.D. Durh. in 1889. After a period of post-graduate work in Paris he returned to his native town where he practised for over 30 years, retiring in 1913. In the following year, on the outbreak of war, he joined the 13th London Regiment (territorial) as medical officer and at the conclusion of hostilities received for a further nine years an appointment under the Ministry of Pensions. He was consulting medical officer to the High Wycombe War Memorial Hospital. Dr. Wheeler married in 1892 Augusta, the eldest daughter of the late Mr. G. D. Bushe, of the Four Courts, Dublin, who survives him, with one daughter who is married to Squadron Leader F. R. Alford, M.C., R.A.F.

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A colleague who first met him just after he had realised his ambition to begin surgical work in what was then a small country hospital says that Ramsay held the same ideals right through his great surgical activities. The surgeon of even such a small hospital ought, he held, to be fully prepared to deal with every sort of surgical emergency that might occur in the town in which he lived. If the art of surgery had progressed elsewhere, through the thoughtful development of existing methods and of new ideas of procedure, it was allowable to hope that some progress might be made by those practising their art in Bournemouth as it then was. These ideals have been fully realised, and the provincial hospital of 50 beds is now the Royal Victoria and West Hants Hospital with 280 beds. Ramsay's services were sought for over much of Hampshire and Dorset, where his opinion was considered decisive on all those aspects of surgery of which his great experience had made him master. Of the many surgical instruments he invented the best known are his uterine hollow dilators, but he also devised useful forms of vulsellum forceps, flushing curettes, broad ligament clamps, and vaginal hysterectomy needles.

The following notes on Ramsay's surgical procedures show the character of his work. A method of nephrorrhaphy for floating kidney goes by his name. In procidentia in elderly persons he did a subtotal hysterectomy, then sutured the stump into the lower end of the abdominal wound, transfixing the stump with a strip of live fascia. Perforated gastric ulcer he treated by bringing the ulcerating area up to the abdominal wound to which he sutured it. He then introduced a rubber catheter downwards towards the duodenum, so as to feed his patient at once with peptonised foods and fluids. The catheter he left in six weeks. For fractured patella he drilled each fragment horizontally and threaded them with silver wires which he approximated by firmly twisting in opposite directions—a method afterwards called by another name. In the radical cure for hernia he used a slip of live fascia from the external rectus to close the opening, its blood-supply being carefully preserved at the basal end. Acute hæmorrhagic pancreatitis he treated by drainage.

A pioneer motorist, and a founder member of Royal Automobile Club, Mr. Ramsay was chairman of the central committee of the Hampshire Automobile Club. He spent his holidays motoring in continental countries. At home he was keenly interested in his garden and in bird and animal life. His daughter, Dr. Olive Ramsay, to whom we owe many of these details, holds several hospital appointments in Bournemouth.

Dr. G. B. SILVER DARTER, who died at Kenilworth, Capetown, on March 21st after a long illness, was a St. Thomas's student and qualified M.B., B.S. Durh. in 1889. In the following year he married Miss Lilian K. Morris, a member of a well-known Berkshire family, and returned to South Africa where he was born and brought up. For reasons of health he settled in the Karoo, becoming medical officer of health for Victoria West. But he occupied important positions in Cape Colony, being chairman of the Board of Executors, director of the Good Hope Savings Bank, and chairman of the Union National and General Assurance Co. He is survived by his widow.

MEDICAL NEWS

Royal College of Physicians of London

At a comitia held on April 25th, with Lord Dawson of Penn, the president, in the chair, the following were elected to the fellowship:—

Sir Robert Muir, M.D. Edin. (Glasgow); Jonathan Campbell Meakins, M.D. McGill (Quebec); Hazel Haward Chodak Gregory, M.D. Lond. (London); Alfred Douglas Bigland, M.D. Liverp. (Liverpool); Hugh Hadfield Carleton, M.D. Oxon. (Bristol); Reginald Hugh Simpson, M.D. Lond. (London); Colonel John Heatley-Spencer, M.D. Lond. (A.M.S. London); Stuart Jasper Cowell, M.B. Camb. (London); Christoph [illegible] M.D. Lond. (London); Major George I [illegible] Aberd., I.M.S. (Madras); Alexander [illegible] (London); Philip Cyril Powter Cloake, [illegible] ham); Keith Douglas Fairley, M.D. Mell [illegible] [illegible], M.D. Glasg. (Glas [illegible] ll); Robert Platt, M [illegible] William Fielding Addey, [illegible], M.D. Lond. [illegible] D.M. Oxon. (London); James [illegible] n); William Moses Feldman, M.D. Lond. (London); Alexander Macdougall Cooke, D.M. Oxon. (Oxford); Edward Rowan Boland (London); John Alexander Charles, M.D. Durh. (Newcastle-on-Tyne); William Evans, M.D. Lond. (London); Thomas Cecil Hunt, D.M. Oxon. (London); Henry Yellowlees, M.D. Glasg. (London); and Robert Alexander McCance, M.D. Camb. (London).

The following were admitted members of the College:—

Francis Ray Bettley, M.B. Lond.; Cyril Robert Birnie, M.B. Lond.; Simon Redvers Bray, M.B. Melb.; Anthony Caplan, M.B. Lond.; Olive Mary Capper-Johnson, B.M. Oxon.; Mohammed Fathi El-Seifi, M.B. Cairo; Ernest Hywel Evans, M.B. Wales; Philip Rainsford Evans, M.B. Manch; Gordon Wilkinson Goodhart, M.D. Camb.; George Bruce Hall, M.B. Sydney; Howard Bluntisham Hodson, M.D. Lond.; John Macdonald Holmes, M.B. Leeds; Terence Graham Faulkner Hudson, M.B. Lond.; George Norman Myers, M.D. Durh.; Bernard Clive Nicholson, M.B. Camb.; Ronald Sherrington Ogborn, M.B. Lond.; John Hammond Palmer, M.D. McGill; Denis Adrian Pritchard, Surg.-Comdr., M.B. Sydney; Edward George Sayers, M.B. N.Z.; Eric Frank Scowen, M.D. Lond.; Joel Nathan Strauss, M.B. Manch.; and Edward James Starbuck Woolley, M.B. Lond.

Licences were conferred upon 103 candidates (94 men and 9 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws of the College. The following are the names and medical schools of the successful candidates:—

B. Agranat, Guy's; I. J. Amorin, Manch.; A. W. H. Ashbery, Birm.; A. C. Ashton, Manch.; E. C. Atkinson, St. Bart.'s; L. J. Bacon, Camb. and St. Bart.'s; P. N. Bardhan, Singapore; A. J. E. Barlow, Leeds; A. H. Barwell, St. George's; S. M. Basu, Rangoon; P. W. G. Baxter, Guy's; T. L. S. Baynes, St. Bart.'s; B. P. Bhattacharjya, Patna and Manchester; Beatrice A. Blake, Royal Free; P. I. Boyd, Univ. Coll; T. M. Boyle, Leeds; Kathleen G. Brimelow, Bristol; A. S. Bullough, and W. P. Cargill, Manch.; R. S. Carpenter, Lond.; J. N. Cave, Camb. and St. Thomas's; A. E. Cohen, Camb. and Lond.; J. L. Collis, Birm.; W. T. Cooke, Camb. and Birm.; J. S. Cookson, Camb. and St. Bart.'s; R. W. Cope, Guy's; L. M. Curtiss, St. Bart.'s; J. V. Dacie, King's Coll.; G. C. Dansey-Browning, St. Thomas's; R. B. Davis, Camb. and Lond.; A. R. O. Denton, Guy's; G. W. N. Dunn, Camb. and St. Bart.'s; E. H. Evans and W. E. F. Evans, St. Bart.'s; Barbara J. Fisk, Margaret FitzHerbert, Evelyn J. Forgan, and Sheila M. Franklin, Royal Free; A. H. T. F. Fullerton, Camb. and Birm.; L. R. Gardner, Camb. and Middlesex; E. Garch, Guy's; R. J. Gilpin, King's Coll.; S. Ginsberg, St. George's; C. Hardwick, Camb. and Middlesex; A. Harris, Manch.; J. R. G. Harris, Camb. and Lond.; A. J. Helfet, Cape and Liverp.; A. T. Hunt, Univ. Coll.; M. Hynes, Camb. and Middlesex; F. J. G. Jefferiss, St. Mary's; A. E. Jowett, Bristol; R. Kauntze, Camb. and St. George's; E. L. Kirstein and A. M. Lasnick, Univ. Coll.; D. C. Lavender, Camb. [illegible] Lawrence, Univ. Coll.; H. T. Laycock, [illegible] V. Lewis, St. Mary's; J. J. Lichterma[illegible] Liverp. and Middlesex; P. S. Luffman, [illegible] Lytton, Camb. and Univ. Coll.; A. B. Marshall, Leeds; Bertha Marston, Birm.; F. R. R. Martin, Camb. and Leeds; R. L. Mehra, Punjab and Lond.; A. G. H. Menzies, Liverp.; L. Millward, Liverp.; W. T. M. Moar, Lond.; R. L. Moody, St. Thomas's; S. H. Navidi, Bombay and West Lond.; J. G. Nel, Wits'rand and St. Bart.'s; D. A. O'Reilly, St. Thomas's; J. F. Paterson, Camb. and St. Bart.'s; J. B. Phillips, Cardiff; E. E. Pochin, Camb. and Univ. Coll.; G. Pollack, St. Mary's; P. Ramchan[illegible]; B. Reeves, Lond.; J. Revans, [illegible] Liverp.; J. R. Rose, Camb. [illegible] Samson, Cape and Lond.; C. W. A. Searle, Camb. and King's Coll.; A. Shapiro, Univ. Coll.; H. S. Sharp, Camb. and St. Thomas's; B. J. Shaw and R. A. Shove, Birm.; P. N. Shutte, St. Thomas's; A. H. M. Siddons, Camb. and St. George's; G. R. Taylor, St. Bart.'s; J. W. Todd, Middlesex; Mary R. Thompson and W. F. Viret, Leeds; A. A. Waller, Guy's; T. J. Walters, Cardiff and St. Mary's; F. G. Ward, St. Bart.'s; P. J. Wenger-Byrne, Charin[illegible] Whitestone, Univ. Coll; S. R. F. Whitt[illegible] Coll.; A. G. M. Wilson, Birm.; E. B. [illegible]; and N. R. Wyndham, Sydney.

Diplomas in tropical medicine and hygiene were conferred jointly with the Royal College of Surgeons upon the following candidates:—

D. S. Abeyagunawardene, J. C. Anders, G. F. Bartholomeusz, S. M. Basu, G. B. Beckner, F. Bell, S. Y. Chao, L. S. L. de la Harpe, G. A. Dragatsi, F. W. Farrar, I. J. Fernando, K. M. Fozdar, F. N. Grannum, T. I. Ibrahim, A. Lucas, R. B. Mehta, B. Patnaik, W. M. Quin, M. J. A. Sandrasagra, O. S. Sela, A. E. Stevens, R. L. Tiruchelvam, H. G. H. Waters, Enid M. O. Will, and W. R. Williams.

Sir Edmund Spriggs will deliver the Croonian lectures on May 14th, 16th, and 21st at 5 P.M., his title being a Clinical Study of Headaches.

Royal College of Surgeons of England

A meeting of the council of the College was held on April 25th with Sir Holburt Waring, the president, in the chair for the first time since his return from Australia, where he opened the new building of the Royal Australasian College of Surgeons. It was decided that the subject for the Jacksonian prize essay for the year 1936 should be hydronephrosis. An offer by Sir Matthew Thompson to present to the College a portrait by him of Sir D'Arcy Power, the honorary librarian, was accepted.

The following hospital appointments were approved for the six months' post required of candidates before admission to the final examination for the fellowship: Royal Infirmary, Halifax, resident surgical officer and first house surgeon; and Metropolitan Hospital, London, senior house surgeon.

The council agreed to the suggestions of the Robert Jones memorial fund committee for the foundation of a Robert Jones professorship of the Royal College of Surgeons of England for an annual lecture or lectures on some subject connected with orthopædic surgery (sum allocated £1000); and for the foundation of a travelling research fellowship to be awarded alternately by the University of Liverpool and the Liverpool Medical Institution jointly; and the Royal College of Surgeons of England. The sum of £1000 was allocated for the professorship and £2000 for the travelling research fellowship.

Sir Holburt Waring was nominated as the representative of the College to serve on the National Council for the Disposition of the Dead. The date of the reception to be given for the International Neurological Congress was fixed for Tuesday, July 30th.

William Thomas Gordon Pugh and Henry Edmund Gaskin Boyle, members of twenty years' standing, were elected to the fellowship of the College. A diploma of fellowship was granted to Frederick Ronald Edwards and diplomas in tropical medicine and hygiene were granted jointly with the Royal College of Physicians to the candidates mentioned above.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—M. Belo-Zercovsky, London Hosp.; A. E. Hassan, Univ. of Birm.; K. P. Pauli, Univ. of Bristol; J. Richter, St. Mary's Hosp.; L. E. Sealy, Univ. of Bristol; and H. M. R. Waddell, Univ. of Manch. and Charing Cross Hosp.

Medicine.—J. H. Bentley, Univ. of Camb. and Middlesex Hosp.; F. W. Treadwell, Univ. of Birm.; J. F. L. Walley, Univ. of Camb. and St. Mary's Hosp.; W. C. Winterbottom, St. Mary's Hosp.; and J. L. Wredden, London Hosp.

Forensic Medicine.—J. H. Bentley, Univ. of Camb. and Middlesex Hosp.; F. H. Holder, Univ. of Manch.; R. G. Joyce, St. Bart.'s Hosp.; N. O. Lucas, Guy's Hosp.; K. P. Pauli, Univ. of Bristol; A. Ponder, Guy's Hosp.; J. F. L. Walley, Univ. of Camb. and St. Mary's Hosp.; and J. L. Wredden, London Hosp.

Midwifery.—B. M. Jensen, Univ. of Liverp.; P. D. Lynch, Guy's Hosp.; and G. M. Williams, London Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: M. Belo-Zercovsky, J. H. Bentley, A. E. Hassan, J. Richter, J. F. L. Walley, and W. C. Winterbottom.

University of London

At recent examinations David Prentice obtained the post-graduate diploma in psychological medicine with special knowledge of psychiatry, and D. S. Clark with special knowledge of mental deficiency.

On May 7th and 14th, at 5 P.M., in the physiology theatre of University College, Gower-street, W.C., Dr. E. W. Fish will lecture on the physiology of teeth. On Mondays, from May 13th, at the same hour and place, Dr. D. H. K. Lee will give four lectures on the physiological effects of tropical climate. These lectures are open to all interested.

University of Edinburgh

Dr. M. M'Nair Murray and Dr. W. C. Wilson have been appointed part-time lecturers in the department of child life and health. Dr. W. G. Millar has been appointed lecturer on morbid anatomy in succession to Dr. James Davidson, and Dr. R. F. Ogilvie, lecturer in the department of pathology. Dr. J. D. Comrie, senior lecturer in the faculty of medicine, has been elected a member of the faculty and of the senatus.

British College of Obstetricians and Gynæcologists

The quarterly meeting of the council was held on April 27th, when Dr. J. S. Fairbairn, the president, who was in the chair, formally admitted to the fellowship,

William Robert Addis (Manchester), Dugald Baird (Glasgow), Alice Bloomfield (London), John Chisholm (Sheffield), Alfred Benthin Danby (Birmingham), *Edward Kirkpatrick MacLellan (Nova Scotia), and Edward Lawton Moss (London).

The following were elected to the fellowship, but have not yet been formally admitted:—

Leighton Carling Conn (Alberta), Amy Margaret Fleming (London), Arthur Alexander Gemmell (Liverpool), Victor John Frederick Lack (London), William Collis Spackman (Bombay), and Leslie Williams (London).

The following were admitted to the membership:—

Josiah Grant Bonnin, David McKay Hart, Kenneth Alfred Knight Hudson, *Benjamin Dunning Knoblauch, *Robert MacKenzie Honey, Ronald Wallace Knowlton, John Laing Mewton, Hugh James McCurrich, Ronald Hodgson Nattrass, *Ossian Robertson, Helen Elizabeth Rodway, Margaret Rorke, Francis Edward Stabler, John Arthur Stallworthy, David Michael Stern, Hugh Stirling, and *Muriel Stowe.

* In absentia.

Ronald McRobert (India) was elected to the membership.

At the annual general meeting which followed, Mr. Aleck Bourne, Prof. James Hendry, Sir Ewen J. Maclean, and Prof. M. H. Phillips were elected to the council as representatives of the fellows, and Dr. W. C. Armstrong and Dr. C. P. Brentnall as representatives of the members. The report of the Joint Council of Midwifery was considered and generally approved, but some aspects of the scheme were reserved for further consideration.

On April 26th a reception was held in the College House, when Lady Simson presented to the College the collection of books purchased as a memorial to her husband the late Sir Henry Simson.

Queen's University of Belfast

The senate have appointed Dr. Henry Barcroft to the Dunville professorship of physiology.

Dr. Barcroft, who is 30 years of age, is the elder son of Prof. Barcroft, of Cambridge. He was educated at Marlborough and King's College, Cambridge, and qualified from St. Mary's Hospital, London, in 1932. In the following year he graduated as B.Chir. Camb., and was appointed lecturer in physiology at University College. His physiological investigations, which began at Cambridge before he took up medical work, have been concerned with the mechanics of the circulation, and are recorded in the *Journal of Physiology*.

Mr. D. C. Harrison, D.Sc. Lond., has been appointed to the White chair of biochemistry. He is at present lecturer in that subject in the University of Sheffield.

Jubilee Commemoration in New Zealand

The New Zealand Jubilee gift to the King is to be a fund for cancer research in the Dominion. It will be administered by the New Zealand branch of the British Empire Cancer Campaign, and the government will contribute £5000.

Fellowship of Medicine and Post-Graduate Medical Association

Courses in thoracic surgery will be given at the Brompton Hospital (May 13th to 18th); in proctology at the Gordon Hospital (May 20th to 25th); in gynæcology at the Chelsea Hospital for Women (May 27th to June 8th); in chest diseases at the Victoria Park Hospital (May 27th to June 1st); in venereal diseases at the London Lock Hospital (May 27th to June 22nd); in obstetrics at the City of London Maternity Hospital (May 25th and 26th); and in infectious diseases at the Park Hospital, Hither Green (June 15th and 16th). Other arrangements include: an M.R.C.P. course in chest diseases at the Brompton Hospital, during June; a clinical and pathological course, on Tuesdays and Thursdays at 8 P.M., at the National Temperance Hospital (June 11th to 27th); and an M.R.C.P. course at the Victoria Park Hospital, dealing with heart and lungs (June 5th to 21st), at 6.30 P.M., on Wednesdays and Fridays. A panel of teachers gives daily clinical instruction in various branches of medicine and surgery. A supper-dance and cabaret has been arranged to take place at Claridge's on Wednesday, June 5th, at 9.30 P.M. The dance is open to all members of the medical profession, and tickets can be obtained from the secretary of the fellowship, 1, Wimpole-street, London, W.1.

The annual dinner of the Royal Medico-Psychological Association will take place at Claridge's Hotel, London, on Wednesday, July 3rd.

Harveian Society of London

The Buckston Browne annual banquet of this society will be held at Merchant Taylors' Hall, Threadneedle-street, E.C., on Thursday, June 13th, at 7.30 for 8 P.M.

Middlesex Hospital Rebuilding

The west wing of the new Middlesex Hospital building of which the Duke of York laid the foundation-stone in June, 1928, will be declared open by the Duke and Duchess of York on Wednesday, May 29th, at 3 P.M.

Royal London Ophthalmic Hospital

The Duke and Duchess of York are opening the new block of buildings at Moorfields on May 16th. The King has consented to the new block being known as the King George V. extension. It has cost £113,000, and only £12,500 remains to be raised. An anonymous donor has promised to give £4500 if the balance of £8000 is raised by the end of June.

Hospitals and Road Accidents

In the Hospitals Year Book for 1935, reviewed in our annotations columns last week, the Central Bureau of Hospital Information gives an estimate that 25,000 victims of road accidents were treated in the voluntary hospitals of Great Britain and Ireland during 1934. The total cost incurred was £235,000, of which £110,000 was recovered by the hospitals, £30,000 from the patients or their friends, and £80,000 under the Road Traffic Acts and common law. In 1927, out of £230,000 only £26,000 was recovered.

Rockefeller Medical Fellowships

The Rockefeller medical fellowships for 1935-36 will shortly be awarded by the Medical Research Council. The value of these fellowships will be not less than £350, exclusive of allowances, and they are given in accordance with the desire of the Rockefeller Foundation to graduates who have had some training in research work in the primary sciences of medicine, or in clinical medicine or surgery, and are likely to profit by a period of work at a university or other chosen centre in the United States or on the continent before taking up positions for high teaching or research in the British Isles. Further particulars are obtainable from the secretary of the Council, 38, Old Queen-street, Westminster, S.W.1. Applications must be made by June 1st.

New Baths at Woodhall Spa

In several directions there are signs of fresh developments at the British spas. The past week has witnessed the opening of a new clinic for rheumatism, and a meeting of the British Health Resorts Association at Buxton, whilst Princess Marie Louise on April 27th laid the foundation-stone of a new bath establishment at Woodhall Spa in Lincolnshire. The "bromo-iodine salt waters" at Woodhall are derived from a shaft sunk for coal in the early years of last century. They come from strata about one hundred feet below sea level, and are hypertonic with sodium and calcium chlorides and contain also about twenty-four and fifty parts per million of iodine and bromine. The palmy days of Woodhall dated from the erection of the existing baths in 1887, but after the war the place, like some other spas, fell into neglect. An "old guard" of visitors, having knowledge of its merits, have always been faithful, however, and with recent changes of ownership a great revival of interest has taken place, under the inspiration of Sir Archibald and Lady Weigall, who have now renovated the existing baths, and added a small clinic for fango packs. They are also erecting a large new bath establishment in beautiful grounds adjoining the Petworth Hotel, which have been named the "Royal Jubilee Park" by the Princess Marie Louise. The open-air assembly at the ceremony of its foundation was attended by the chairman and members of the urban district council, a number of parliamentary and public representatives of the county, and many hundreds of residents. Mr. Geoffrey Barton, the chairman of the Woodhall Spa Advancement Association, which has been a very active and useful body, proposed a vote of thanks to the Princess, which was seconded by Dr. Leonard Boys, who said it was the happiest of his days in thirty years at Woodhall Spa. Dr. Fortescue Fox, representing the British Health Resorts Association, spoke of the great change that had come over this branch of medical practice in his time; a new *science of the health resort* had sprung into existence. The smaller spas were an essential part of a national scheme of health resorts and often obtained world-wide reputation for particular ailments. Woodhall, he thought, might concentrate especially on the relief of rheumatism by manipulation pools and fango, the effective treatment of catarrh, and inflammatory deposits in the pelvis, and the use of physical remedies for high blood pressure.

Committee against Malnutrition

As already announced, a public meeting will be held at the Conway Hall, Red Lion-square, London, W.C.1, on Thursday, May 16th, at 8 P.M., to consider especially the health and nutrition of women and children in this country. Prof. V. H. Mottram will take the chair, and the speakers will include Miss Eleanor Rathbone, M.P., Dr. Janet Vaughan, Dr. J. R. Marrack, professor of chemical pathology at the London Hospital, Mr. Joseph Needham, Sc.D., reader in biochemistry in the University of Cambridge. Tickets may be had from the hon. secretary, at 19c, Eagle-street, Holborn, W.C.1 (1*s.* each).

The committee came into existence rather more than a year ago. Its name expresses the opinion of its members that all the factors necessary for the eradication of malnourishment are now completely within the power of society; whatever degree of malnourishment may have been inevitable a century ago is now a social anomaly. Though not concerned with the measures that must be taken socially to achieve its object, it regards malnutrition as the most significant manifestation of human poverty, and it endeavours by public meetings and other means to demonstrate the facts now established scientifically. A bulletin is published every two months which is devoted to every relevant aspect of nutrition and malnutrition.

St. Mark's Hospital Centenary

The Lord Mayor presided at the centenary banquet of this hospital which was held at the Mansion House on April 25th, when an appeal was made for £60,000 for necessary extensions. Mr. H. Clifford-Turner, chairman of the appeal committee, said that is was Frederick Salmon who, a hundred years ago, conceived the idea of starting a special clinic for the treatment of cancer of the lower intestines; he set up in Aldersgate-street and there treated the poor of the City of London. His fame spread, and in 20 years he had laid the foundation-stone of St. Mark's Hospital. Now, he said, there were nearly 200 men and women knocking at the hospital door who could not be let in because they had not sufficient accommodation. A number of them were suffering from cancer of the lower intestine, which, if caught in the early stages, stood a good chance of being cured. Sir Patrick Hastings, in proposing "The Hospital," said it was the only free hospital in the world that dealt with cancer of the lower bowel. It was awful to realise that if those who were waiting to enter the hospital were kept out too long, their chances of cure were lost. Money was also required to provide proper accommodation for the nursing staff. In responding to the toast, the Lord Mayor said that Charles Dickens, than whom there was never a keener critic of charitable institutions, was a generous contributor to the hospital for 25 years. "The Centenary Appeal" was proposed by Major Colin Cooper, who said that the nature of the diseases treated had been a handicap in appealing for funds. They had no heroic incidents as had the larger hospitals, neither had they maternity wards. Cancer was bad enough, but the kind of cancer they were fighting at St. Mark's was the most terrible human affliction. When the disease was detected in its early stages the percentage of patients cured was nearly 100; at the hospital it was actually nearly 50.

Mr. R. Holland-Martin, treasurer of the hospital, replied. Sir John Barran, in proposing "The Lord Mayor," spoke of the unbroken chain of happy tradition which had associated the chief magistrate of the city with St. Mark's Hospital for 100 years. It was announced that during the evening £3443 had been collected, which, with the amount of £6070 previously collected for the building fund, made a grand total of £9513.

Chelmsford Hospital

It is announced that Mrs. J. A. Keene has given £20,000 for building extensions to this hospital. Since the death of her husband three years ago she has distributed £100,000 to various institutions and charities.

University of Dublin

Mr. Joseph Barcroft, F.R.S., professor of physiology at the University of Cambridge, has been appointed the Dr. John Mallet Purser lecturer in Trinity College, Dublin, for 1935. He will speak on the mammal before and after birth (June 25th), and on chemical conditions of mental development (June 26th). The lectures will be given in the department of physiology at 5 P.M., and will be open to all medical men and medical students.

London School of Hygiene and Tropical Medicine

The 1935–36 course of study at this school, which qualifies students to sit for the University of London diploma in public health, and covers a period of nine months' whole-time work, will begin on Sept. 30th.

An open competition will be held on June 27th and 28th for the Fishmongers' Company studentship, which carries a free place in the course. Further information may be had from the secretary of the School, Keppel-street, W.C.1.

Institute of Medical Psychology

Prof. L. J. Witts, Dr. G. W. B. James, and Mr. A. E. Webb-Johnson have been appointed to the medical advisory board of this institute (formerly the Tavistock-square Clinic). It is announced that applications for evening treatment can now be entertained, and the names of those wishing to attend the morning and afternoon sessions may also be submitted. The address of the clinic is Malet-place, London, W.C.1.

Hospital Amalgamation in Dublin

Speaking at the annual meeting of Sir Patrick Dun's Hospital last week, Dr. T. G. Moorhead, chairman of the board of governors of the hospital, referred to the proposed amalgamation of Dun's with Mercer's Hospital and the Royal City of Dublin Hospital. He said that following on negotiations between the three institutions and careful consideration a provisional plan of amalgamation had been agreed on. The dean had received the provisional approval of the Hospitals Commission. A Bill to effect the amalgamation is being drafted, and it will probably be introduced to the Dail next October.

Retirement of Dr. M. J. Nolan

At a meeting of the committee of management of Down Mental Hospital on April 20th, the chairman described the present efficiency of the hospital as a monument to Dr. Nolan's zeal and foresight. He is now relinquishing office after 42 years at Downpatrick, his final act being the inauguration of a new department for electro- and hydro-therapy and occupational treatment recently opened by the governor of Northern Ireland. Dr. Nolan began his professional life in general practice in Limerick city, but soon turned to asylum work, of which his 50 years' experience has now entitled him to the position of consulting visitor in lunacy to the Lord Chief Justice. He carries with him into retirement the good wishes of the whole service.

Royal Sanitary Institute

The annual health congress of this institute will be held at Bournemouth from July 15th to 20th under the presidency of Lord Malmesbury. Among the presidents of the sections are Dr. Thomas Carnwath (preventive medicine) and Dame Louise McIlroy (maternity and child welfare), while Dr. R. Veitch Clark presides over the conference of medical officers of health. The many subjects arranged for discussion at the congress include various aspects of venereal disease, the care of the mother in industry, the care of the older worker, the health resort as part of the public health service, the milk supply, the influence of deafness on sickness and disablement benefits, the simplification of national health insurance, and overcrowding in relation to the new Housing Bill. A health exhibition will as usual be attached to the congress, and an attendance of about 1500 members and delegates is expected. Particulars may be had from the secretary of the institute, 19, Buckingham Palace-road, London, S.W.1.

[illegible]

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

[illegible]

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

[illegible]

ROYAL INSTITUTION, 21, Albemarle-street, W.

FRIDAY, May 10th.—9 P.M., Dr. C. S. Myers, F.R.S.: The Scientific Approach to Vocational Guidance.

UNIVERSITY OF LONDON.

TUESDAY, May 7th.—5 P.M. (University College, Gower-street, W.C.), Dr. L. W. [illegible]: The Psychology of Teeth. (First of two lectures.)

UNIVERSITY OF BIRMINGHAM.

TUESDAY, May 7th.—3.30 P.M. (General Hospital), Prof. Seymour Barling: Cases Illustrating Gastro-duodenal Surgery.

WEDNESDAY.—3.30 P.M. (Anatomy Theatre, University, Edmund-street), Dr. Howard Collier: Metallic Poisoning.

FRIDAY.—3.30 P.M. (Queen's Hospital), Mr. Bernard Ward: Recent Advances in the Diagnosis and Treatment of Diseases of the Genito-urinary System.

ROYAL INFIRMARY, Manchester.

TUESDAY, May 7th.—4.15 P.M., Mr. W. R. Douglas: Diagnosis and Treatment of Carcinoma of the Breast.

FRIDAY.—4.15 P.M., Mr. P. R. Wrigley: Demonstration of Surgical Cases.

ROYAL INFIRMARY, Dundee.

TUESDAY, May 7th.—3.15 P.M., Mr. Chisholm: Clinical Gynæcological Cases. 4.15 P.M., Dr. Fairlie: Ovarian and Pituitary Hormones.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

[illegible], May 5th.—10.30 A.M. (Newcastle General Hospital), Mr. J. Clay: Surgical Cases of Clinical Interest.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, May 8th.—4.15 P.M. (Royal Hospital for Sick Children), Dr. Stanley Graham: Medical

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Hospital for Sick Children.—Ophthalmic Surgeon.

Accrington, Victoria Hospital.—H.S. £150.

Banbury, Horton General Hospital.—Res. M.O. At rate of £150.

Bedford County Hospital.—First and Second H.S. At rate of £155 an [illegible]

Belfast, Fors [illegible] —H.P. At rate of £150.

Birmingham [illegible] *spital.*—Res. M.O. At rate of [illegible]

Birmingham City Maternity and Child Welfare Dept.—Temporary M.O.'s. Each £10 per week.

[illegible] -Jun. M.O. At rate of £200.

[illegible] Asst, M.O. At rate of £200.

[illegible] *Common, S.W.*—H.S. At [illegible] for Dis. of Children.

[illegible] -Hon. Surg.

Bradford, Royal Ear and Eye Hospital.—H.S. £160.

Brighton, New Sussex Hospital for Women, Windlesham-road.—H.P. £100.

Brighton Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £250.

Bristol General Hospital.—Sen. Res. M.O. £200.

British Medical Association, Tavistock-square, W.C.—Asst. Med. Secy. £800.

Burton-on-Trent General Infirmary.—Cas. O. and H.P. £150.

Cancer Hospital, Fulham-road, S.W.—Asst. Radium Officer. £350.

Cardiff, Welsh National School of Medicine.—Part-time Demonstrator. £50.

Central London Throat, Nose and Ear, Hospital, Gray's Inn-road, W.C.—Third Res. H.S. At rate of £75.

Charing Cross Hospital, W.C.—Hon. Anæsthetist.

Cheltenham General and Eye Hospitals.—H.S. to Eye, &c., Dept. £300.

Chester Royal Infirmary.—H.S. £150.

Child Guidance Council, Upper Woburn-place, W.C.—General Secretary. At rate of £400.

Children's Hospital, Hampstead, N.W.—Res. M.O. At rate of £150.

Coventry and Warwickshire Hospital.—H.S. for Aural and Ophth. Depts. At rate of £125.

Denbigh, North Wales Sanatorium.—Asst. Res. M.O. £200.

Dewsbury and District General Infirmary.—Second H.S. £150.

Dorchester, Dorset County Hospital.—H.S. £160.

Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. £150.

Edinburgh Royal Infirmary.—Superintendent. £800.

Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.

Fulham Hospital, St. Dunstan's-road, Hammersmith, W.—Clin. Asst. At rate of £150.

Golden Square Throat, Nose and Ear Hospital, W.—H.S. £100.

[illegible] —Asst. Radiologist. 50 gns.

[illegible] Res. M.O. £250.

[illegible] *al.*—Res. M.O. At rate of £150.

[illegible] *Hospital.*—Hon. Phys.

[illegible] *nd Diseases of the Chest, Brompton,* [illegible] of Pathology. £350.

[illegible] *Great Ormond-street, W.C.*—H.P. and H.S. Each at rate of £100.

Hospital for Tropical Diseases, Gordon-street, W.C.—Res. Med. Supt. £400.

Huntingdon Administrative County.—Asst. County M.O. and Asst. School M.O. £50 a month.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Second Asst. to Med. Supt. £200.

Llanelly and District Hospital.—Hon. Part-time Radiologist.

London Homœopathic Hospital, Great Ormond-street, W.C.—H.S. Also Gynæcological H.S. Each at rate of £100.

London Hospital, E.—Paterson Research Scholar and Chief Asst. in Cardiac Dept. £400. Also 1st Asst. to Gyn. and Obstet. Dept.

London Lock Hospital, Harrow-road.—Surg. Reg. £100.

London University.—Geoffrey Duveen Travelling Studentship. £450.

Macclesfield General Infirmary.—Second H.S. At rate of £150.

Manchester, Ancoats Hospital,—Cas. O. At rate of £250. Med. Reg. £50. Also H.S. At rate of £100.

Manchester Ear Hospital, Grosvenor-square.—Non-Res. H.S. At rate of £150.

Manchester, Monsall Hospital for Infectious Diseases.—Asst M.O. £350.

Manchester, Park Hospital, Davyhulme,—Res. Surg. O. £500.

Manchester Royal Infirmary.—Jun. Asst. M.O. in Radiological Dept. £350.

Manor House Hospital, Golders Green, N.W.—Jun. M.O. £200.

Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.

Market Drayton, Cheshire Joint Sanatorium.—Clin. Asst.

Middlesbrough, N [illegible] —Third H.S. £125.

National Hospita [illegible] *Nervous System, Queen-square, W.C.* [illegible] Also H.S. £150.

Newark General [illegible] £175.

Newcastle-upon-T [illegible] n. Res. H.S. £150.

Newport, Isle of Wight, County Mental Hospital.—Clin. Asst. At rate of 30 gns.

Newport, Mon., Royal Gwent Hospital.—Sen. Res. O. £350–£400.

Northampton County Mental Hospital, Berrywood.—Jun. Asst. M.O. £350.

Oldham, Boundary Park Municipal Hospital.—Res Asst. M.O. At rate of £200.

Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—H.S. At rate of £200.

Preston, Sharoe Green Hospital.—Sen. Asst. Res. M.O. At rate of £150.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. Anæsthetist. £100. Res. Anæsthetist and Dist. Res. M.O. At rate of £90. Also Asst. Res. M.O. At rate of £80.

Radium Institute, Riding House-street, W.—H.S. At rate of £150.

[illegible] s. O. and H.S. Each £125.

[illegible] —Res. M.O. and H.P. [illegible] ively.

[illegible] —Election of Professors and Lecturers.

Royal Northern Hospital, Holloway, N.—Res. M.O. £370. Also H.S. and H.P. Each at rate of £70.

St. Bartholomew's Hospital, E.C.—Asst. Physician-Accoucheur.

St. Bride's, Pembrokeshire, Kensington Hospital.—Res. M.O. £350.

St. Helens County Borough.—Deputy M.O.H. £700.

St. Mary's Hospital Institute of Pathology and Research, W.—Res [illegible] t rate of £200.

St. Mar [illegible] *ighgate-hill, N.*—Asst. M.O. £350.

Sheffield [illegible] At rate of £80.

Shrewsbury, Royal Salop Infirmary.—Two Res. H.S.'s. Each at rate of £160.

Southampton, Royal South Hants and Southampton Hospital.—Cas. O., Res. Anæsthetist, and H.S. Also H.S. Each at rate of £150.

South Shields, Ingham Infirmary.—Sen. and Jun, H.S.'s. £200 and £150 respectively.

Stockport Infirmary.—H.P. At rate of £150.

Stoke-on-Trent, Stanfield Sanatorium.—Res. M.O. £350.

Sunderland Royal Infirmary.—H.P. and H.S. Each £120.

Swansea, Cefn Coed Hospital.—Asst. M.O. £350.

Swansea Valley, Adelina Patti Hospital, Craig-y-nos.—H.P. At rate of £150.

Talgarth, Breconshire, Mid-Wales Counties Mental Hospital.—Asst. M.O. £350.

Truro, Royal Cornwall Infirmary.—H.S. £170.

Tunbridge Wells, New Kent and Sussex Hospital.—Second H.S. £150.

University College Hospital Dental School, University street, W.C.—Demonst [illegible] t. £200.

Wakefield Me [illegible] M.O. £350.

Warrington, [illegible] *Winwick.*—Asst. M.O. £500.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E. H.P. and H.S. Each at rate of £100.

Worksop, Victoria Hospital.—Two Residents. At rate of £150 and £120 respectively.

Births, Marriages, and Deaths

BIRTHS

ABRAHAMS.—On April 25th, at Welbeck-street, the wife of Sidney Abrahams, M.D. Lond., of Leytonstone, E., of a son.

BOND.—On April 25th, at Brighton, the wife of Laurence Temple Bond, M.B. Camb., of a daughter.

EVANS.—On April 19th, at Edgbaston, Birmingham, the wife of L. P. Jameson Evans, M.B. Camb., F.R.C.S. Eng., of a daughter.

HINDLEY.—On April 21st, at Watford, the wife of G. Talbot Hindley, M.R.C.S. Eng., of a daughter.

IRVINE.—On April 25th, the wife of K. Neville Irvine, D.M. Oxon., of Henley-on-Thames, of a daughter.

JONES.—On April 24th, at Liverpool, the wife of Tudor Jones, M.B. Glasg., of a daughter.

LANGMEAD.—On April 19th, at Tunbridge Wells, the wife of L. B. Langmead, M.R.C.S. Eng., of a daughter.

MACBETH.—On April 26th, the wife of R. G. Macbeth, B.M. Oxon., F.R.C.S. Edin., of Oxford, of a son.

SEWARD.—On April 24th, at Exeter, the wife of Charles Mackay Seward, M.D., F.R.C.P. Edin., of a daughter.

SHAW.—On April 16th, at Harley-street, W., the wife of Wilfred Shaw, M.D. Camb., F.R.C.S. Eng., of a daughter.

STENHOUSE.—On April 17th, at Morpeth, the wife of Geoffrey B. Stenhouse, M.B. [illegible] of a son.

TWIGG.—On [illegible], the wife of Major T. H. Twigg, [illegible] a son.

WALKER.—[illegible] Farnborough, Hants, the wife of [illegible] Oxon., of twin sons.

WILSON.—On April 26th, at Mwanza, Tanganyika, the wife of George A. Wilson, M.B. Aberd., E.Afr. Medical Service, of a son.

WRIGHT.—On April 24th, at Welbeck-street, London, W., the wife of James Wright, M.B. Aberd., of Great Bentley, Essex, of a son.

MARRIAGES

PATTERSON—HABERSHON.—On April 25th, at St. Mary [illegible] Whiston, C. F. Lloyd Patterson, [illegible] llis Joan Habershon, only daughter of [illegible] of Oakwood Grange, Rotherham.

DEATHS

RAMSAY.—On April 24th, at Bournemouth, Frank Winson Ramsay, M.D. Durh., F.R.C.S. Edin., in his 73rd year.

RYGATE.—On April 23rd, John Richard Rygate, L.R.C.P.I., L.R.C.S. Edin., of Barnet.

SCOTT.—On April 29th, 1935, Sack Noy Scott, M.R.C.S., L.R.C.P., D.P.H., at Lynscott, Headland Park-road, Paignton, South Devon, aged 73 years.

STURROCK.—On April 24th, at Inverness, James Prain Sturrock, M.A. St. And., M.D. Edin., H.M. Commissioner of the General Board of Control, Scotland, Edinburgh.

WILSON.—On April 22nd, suddenly, David Ashley Wilson, M.B. Glasg., Great Budworth, Cheshire, in his 58th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

SOME ASPECTS OF THE PSYCHOLOGY OF KINDNESS

BY MARY ALLEN, M.A. Camb., M.R.C.S. Eng.

KINDNESS, as it is usually understood, is a very extraordinary thing, and has such peculiar and unlooked-for effects on both the giver and the recipient, that it may prove very interesting to investigate it and to learn something more about it. "As it is usually understood" is meant to indicate that there may be another type of kindness not belonging to the instinctual and emotional life, but belonging to the world of the spirit, that which is an ever open door and a true charity. This kindness will be thought of again at the end.

The statement that "It is more blessed to give than to receive," would be upheld by many many people, and it is astonishing to notice how often the receiving of kindness is attended by the spirit of "envy, hatred, and malice and all *uncharitableness.*" "I could not bear you to do it out of kindness. I am only a patient whom you are being decent to." This kind of remark is so often heard from patients, but an even better illustration of what they may feel was demonstrated by one patient in a dream. The patient was a woman, unmarried, aged 32. For reasons into which it is unnecessary to enter, she was having treatment for an extremely small fee. Her dream was as follows:—

> "A very primitive man wearing animal skins had offered her a brooch of great value, and she was searching among her possessions for something to give in return that should be of equal value to the man with the brooch, but not of equal value to her."

On analysis of the dream, the primitive man was found to represent the analyst who had offered her something very valuable for a very small amount of money. Two distinct feelings emerged, one of great admiration and one of distinct contempt. She said that it seemed so foolish and silly to offer her such a valuable brooch for so little, she had not much respect for the man. She gave the impression that she really thought he must be a little weak in the head to have done such a thing. For two interviews before the production of this dream, the analyst had been wondering why there had been such an atmosphere of contempt about, and why the patient had given the impression of being so superior, because at first she had done nothing of the kind.

There is another type of person who laps up kindness like a cat laps up milk, but the more she is given the more she demands, and when the supply fails she turns and rends. Lastly, there is the person who possesses, and is capable of acquiring so little from life, that kindness is an absolute necessity, and is, in some of these cases, thankfully received. It may seem odd to suggest that *in some cases only* the kindness is thankfully received. Is not everyone glad when others are kind to them? Does not everyone like having things given to them? Do not all people thankfully receive? There are indeed comparatively few people who are capable of *taking.* It is far harder to take than to give, it is more blessed to give than to receive.

The Incapacity to Receive Kindness

What is it that makes it so hard for people to take? What lies behind this incapacity to receive kindness? The following are some of the motives concerned: (1) That that particular form of kindness is not desired at all. (2) The receiving of kindness may make the recipient feel inferior. (3) The recipients must not allow themselves to receive anything at all. (4) It prevents the recipient from the joy of feeling themselves to be hurt, badly used, or martyrs.

I

To take the first of these motives—that the particular form of kindness is not desired; most people know that rather interfering kindness offered to satisfy some desire of the giver. It is illustrated very well in the giving of Christmas presents. "I must give Dolly something. What will do? Oh, I know! that orange tablecloth that I bought at that Sale of Work last week." There is no thought that perhaps Dolly may not use tablecloths, or even if she does the orange cloth may not go with the cerise flowers on the breakfast service. Again, it is of no use offering a person something that they have no room for, which is the same as having no wish for. It is no use assuming that they would like it because one would like it oneself. The offering then falls where there is no space for it, where no response is possible.

II

The second motive behind the inability to receive was that it made the recipient feel inferior. Why? It is not the fault of the kindness alone, or of the recipient alone, which makes the latter feel inferior, but of the relationship between the two. The kindness which increases the inferiority feeling of a person is the kindness which includes pity, and extremely few people can endure to be pitied. Although it is said that pity is akin to love, it may also be perilously akin to contempt. For a person to be conscious of being pitied is for them to be conscious of how very little they have in comparison with the person pitying. They feel powerless, unimportant, and dependent, and the feeling gradually arises—"How dare they make me out to be nobody! I don't want their pity, blast them!"

It is a very common thing, this feeling of inferiority, when there does not seem to be any power to get things from life. Superiority, power, and well-being go so very much hand-in-hand with the quantity of material possessions, including brains, and physical charm and beauty among those material possessions. It must always be so as long as to feel good, to have a feeling of well-being, means to possess much; as long as quantity is confused with quality. There is another feeling of the recipient of kindness, which says, "I don't want them to do it out of kindness, but because they want to do it." This gives a definition of kindness—the doing something for another person, and the recipient says, "I don't want them to do anything for me. What I really want is for them to love me." This was very aptly illustrated by the patient who said, "I am only a patient whom you are being decent to."

This type of inferiority is very largely mitigated by the giving of something back. The same patient was invited by the analyst to share a taxi, as they were both going for a short distance in the same direction. The patient said, "Oh, no, it wouldn't be fair," the idea being that it would only be fair if she paid part of the fare. She could not allow herself to have anything unless she balanced it by an equal giving. The second patient who dreamt about the brooch, it was seen also dreamt that she was trying to find *something to give.* Both these patients felt undervalued; the one with the taxi because she herself could not afford the fare of a taxi, and she did not feel that she was giving her analyst anything by accompanying her. She never felt that she was capable of giving anyone any pleasure by her presence. The patient of the brooch-dream felt undervalued because it accentuated how little value she had when measured by material possessions.

There is a very strong instinctive tendency that something must always be given "for value received." It would seem quite true, and to be a question of balance and relationship and to work something like this. Before a baby is born it has warmth, safety, comfort, and food whenever it wants it, or even before it knows it wants it. There is no want and no desire; the relationship inside the mother can be called a balanced relationship, or, better still, a neutralised relationship.

In a book on landscape painting by a well-known artist now dead, a good deal of space is given to the question of arrangement in pictures, and a sketch is shown in which the arrangement on one side is balanced by by the arrangement on the other.

Thus there are two hills, one on each side of the picture, each side matches, the sketch giving the impression of being quite dead. The same effect can be obtained by the arrangement of furniture in a room. For instance, a table can stand exactly in the middle of the room with half-a-dozen books round it at equal intervals apart; or the arrangement of a mantelpiece may be as follows: the actual mantelpiece held two objects, a picture, or rather two pictures in a double frame hinged together, and a clock. Above was a mirror very little larger than the breadth of the double picture when opened out. Beneath the mantelpiece was, of course, the fireplace. The clock, a very small one, stood at one end of the mantelpiece, but the picture was exactly under the mirror, right in the centre. The arrangement very considerably took away from the value of the picture.

A second picture followed the neutralised one of the landscape book, a picture in which nothing matched and very little was on the same level. A second arrangement of the mantelpiece came about, in which all that was moved was the picture, and that was moved to the other side of the mirror.

The first picture was dead, and the first arrangement of the mantelpiece was dead; they left the impression of there being no further use for them. The second picture and the second arrangement of the mantelpiece were alive, because they gave the impression of an unbalanced scale, leaving the observer to supply the other side of the balance and so form a relationship.

With the baby before birth there is no relationship because there is no unbalance. Likewise with the patient and analyst, at the beginning, and for the first part of the treatment, there is no relationship because there is no unbalance on the part of the patient. The receiving of value for which nothing is given in return creates an unbalance, which the patient cannot tolerate. It is the capacity to tolerate the unbalance which brings relationship with all that follows in its train into the realm of possible things.

III

Following on what has been said above is the third of the motives behind the inability to receive kindness, the motive that will not allow the recipients to receive anything at all. They are not *open* to kindness. It is not possible to put anything where there is no space for it; the patient has balanced himself and there is no room within the balance for anything else. Both sides match and are equal; there is no swing and no movement; nothing can be taken in. The patient is in the same position as the baby inside the womb; the balance has been formed because the patient could not possibly tolerate the unbalance; thus there is no room for kindness, or for anything to be received; there is nowhere to put it without turning something else out. "It is more blessed to give than to receive" can be taken in more ways than one.

IV

The fourth motive—that kindness prevents the recipient from enjoying being hurt, or feeling badly used, or posing as a martyr, is really all much of a piece with the third one that has just been discussed. It would seem to work this way: The child in the womb has everything it wants before it wants it, and there can be no unbalance. After birth, this state of things no longer exists and the baby has to wait for its food, and to become accustomed to not having what it wants even when it wants it. In other words, it must endure unbalance and a small space of *not having* is entering into its life. It varies in size, and may be very, very small, but there it is, and the question of unbalancedness is the question of keeping that space free and open, so that the balance can move and take in anything that comes along and does not remain a fixed balance. If both sides of the balance are cluttered up, it stays put, and nothing can be taken in without first turning something out.

Now the possible things that can be put into that small space to make the balance are numerous, and martyrdom and enjoyment of being hurt are of the number. Kindness, something given, threatens to turn something already possessed out of the balance. One of those things has been said to be martyrdom. It is a curious but very real pleasure that certain people get out of this feeling, and anything given to them in a direct fashion is unwelcome, because then the feeling of martyrdom and ill-usage is very difficult to maintain. The enjoyment of ill-usage can go to great lengths, even to the pleasure in seeing someone else made a favourite of, because it increases the feeling of ill-usage. It seems almost past belief that anyone should enjoy these feelings: so why do they?

The original feeling is: "I want to be everyone's favourite, and to be loved and valued very highly, but I find I'm not." That is an unbearable situation, and there are several things which the patient can do about it. One is: "I can't have the pleasure of being the best treated so I will have the pleasure of being the worst treated." There is distinction in being the worst, the patient is not of the common herd. In this case, kindness threatens the loss of the distinction which is so much valued. There is another very unpleasant habit which illustrates this point. It is the habit that some people have of saying: "Of course, I don't matter." The remark may be a perfectly genuine one, and the person may not matter in that particular circumstance, which fact he may be understanding and accepting, but as a rule it is the sign of the false martyr. Tremendous satisfaction is obtained by not having value, because if dissatisfied with the value he did receive the patient would find it too painful to bear, so it becomes a pleasure not to have it or to be undervalued.

A patient, married, aged 34, came in one day grumbling furiously because the waiting-room had a few odd things about and was not as tidy as usual. It was just before Christmas, and the patient said "Of course the house was kept for the doctors, and the patients only came second: they did not matter." The doctor said: "Well, it is just Christmas time: you must excuse it this once. I don't expect it will be like that again."

The fury of the patient when she came in was as nothing to the fury she exhibited after this remark. She had been thoroughly enjoying her own martyrdom, and the doctor, quite unthinkingly, pricked the bubble. She did not get over it for the whole hour, and nothing that the doctor could say was of the slightest use. It often occurs that anger and hatred are directed against the givers of kindness. Resentment is felt by people against one who makes them feel inferior, or who takes away from them, however unwittingly, their chosen joy.

The Giver and his Motives

A great deal has been said about the recipient of kindness. What, now, of the giver and his motives? Why does he want to give? (1) To be important and to have power. (2) To create an emotional situation, and to gain love. (3) To relieve a painful situation. (4) As a compensation for feelings of unkindness. (5) To maintain a balance.

I

To be important and to have power is the driving force or motive power behind very many activities, and one of the methods of obtaining these things, or rather of feeling oneself to have obtained them, is to be in the position to bestow gifts, privileges, and kindnesses of various sorts. The tiny baby has everything given to it, and later may come to look upon the condition of receiving as one of inferiority.

What an enormous superiority is to be found attached to the position of the person who gives, who has many possessions, or much money to give away! How very inferior feels the person who is unable to give an adequate tip! And again, how marvellously superior it may feel to be in the position of Lady Bountiful! Even more superior is it to be able to pull strings! "I'll put a word in for him, Mrs. ——" or "I could have got you in if you had come to me about it" are quite frequent remarks from people in positions of importance, and how the ones that feel inferior long to be able to say it too!

A patient, aged 39, was in the habit of bringing her doctor flowers, but she always brought a very curious assortment, such as a few daffodils, two tulips, a bunch of violets and a piece of lilac. When asked why she brought such a varied bunch she did not quite know, but she thought that she wanted her doctor to feel that she had a very wide choice so that she could feel superior.

II

Gifts are often brought and kindnesses done in order to create an emotional situation. This is very well illustrated by patients. The gift must be brought in person, so that they may be thanked, and it feels as if there is a much closer relationship with their analyst than before. They go away from the interview feeling that their analyst is pleased with them, and thinks how nice they are, and it all feels very intense, which is what they want. They feel themselves to be loved and to be of value. Under the same heading in everyday life comes the embroidering of slippers for the curate, or the "pair of (offertory) bags worked for the vicar by a lady of the congregation." Another aspect of this comes out in a sort of vicarious kindness very well illustrated by that very delightful children's book, "The Wild Ruthvens." The book deals with a family of boys and girls, the eldest girl being very much attached to a curate of the neighbouring church. The amount of kindness expended on the boys' Sunday-school class compared with the very conspicuous lack of it shown at home, is amazing.

III

Kindness is often the result of a desire to relieve a painful situation. It is undoubtedly a horrible thing to see pain and suffering in another individual, and it becomes very intensely painful when seen in a loved person. Of course, the natural instinctive reaction is to say: "I can't bear this. I must do something about it at once; this situation must be altered quickly." An anxiety situation has arisen. It is all very well to make an effort to relieve the painful situation, but it is advisable to have some idea as to whether the desire to alter it is to relieve the pain of the suffering person, or to relieve one's own anxiety and consequently unbearable feelings. This latter type of kindness may be devastating, and it also very often results in the "weariness in well doing," because it is often not very far-seeing and the giver finds it very difficult to bear the fact that the situation is not really relieved, but owing to mistakes must lapse again and again into the same old situation. The giver in these cases is apt to get very exasperated, and even annoyed, and is inclined to feel that he can never get rid of his protégés, and that they are always asking him for things.

IV

To be kind as a compensation for feelings of unkindness is very common indeed. Children are usually brought up that to show animosity is wicked, and that they will not be loved if they do show it, or at any rate they will be very strongly disapproved of. The result is that they come to disapprove of themselves for having feelings of animosity, and the feeling is repressed or ignored and is sometimes balanced by an excessive kindness.

There was a girl, aged 14, who had a stepmother. The latter was not physically cruel, but was very jealous of and the position the child occupied in relation to her father, she made the child's life an absolute misery. At Christmas, and on her birthday, however, the stepmother produced marvellous presents, thereby completely bewildering the child, who felt she was being unjust and horrible in her estimation of her stepmother.

Another frequent example of compensatory kindness is the daughter's care for the widowed mother. The following is an interesting case in which there was a brother and sister, and a mother widowed at a very early age.

The boy, who was very devoted to his mother, grew up very fair, with beautiful wavy hair, and a rather womanish expression. He was very popular socially, very artistic, and had very second-class brains. Moreover, as has been said, he was very fond of his mother. He is now about 40, or a little more, and of all the years since he left school at 18, he has been about 10 years only in England.

The girl grew up, very intellectual, not very feminine, and obviously cut out for a university career. She has stayed at home to look after her mother, though her feeling is almost one of hatred and her jealousy of her brother is unmistakable. Her cry has always been: "I can't leave mother." She sees now, at this very late stage of proceedings, that at one time she could have left, but it is now too late as her mother is actually too old and infirm to be alone.

This type of kindness based on the motive of unkindness is the type that kills. Very little thought is given to the recipient and to the things they would like done. It can even be used as a weapon of attack. It is very easy to kill by kindness where the original motive is to kill.

V

Giving can maintain a balance. Something has been said about the inability to put anything where there is no place for it unless something is turned out, and this question brings in the relationship of kindness to guilt. Guilt can be described as the feeling maintained by the balance being made up of something that does not really belong there. If there is anything in the wrong place, discomfort results; but how has it got there? It is quite obvious that it has been put there, and it is more than probable that it is the possessor himself who has put it there; taken it out, so to speak, of its right place and time and put it in the balance. If that is so, then a space which in its turn should not be there has been left from whence the original something was taken. As a vacuum is intolerable, something must be turned out to put in the place left vacant. The person concerned manages quite well as long as he can delude himself that the vacuum is not there, as long as it is not brought to his notice by anything outside. As soon as he realises its existence, then he feels uncomfortable and must do something about it. He feels he must not, or ought not to receive anything and that if he does he must either pay it back at once, or deprive himself of something else. He may even react by anger punishing the person who is kind to him, because he feels he really should punish himself for taking the kindness or for the original theft.

The instinctive life will always fill up gaps, emptiness is unbearable—"Nature abhors a vacuum," so that any feeling of emotional emptiness is dealt with by removing something from the surrounding medium and putting it in the empty space. The remover then feels balanced and complete, though it may be a stolen balance, and a stolen completeness. And of course, there is no room for anything to come in, no room to expand and grow; and moreover there is that empty space outside; the person whose character one would like to take away must be praised to the skies, and the person whose possessions one would like to remove, and emotionally does remove, must be given things. It is very interesting to notice what excellent testimonials may be given where the employed person is unconsciously disliked.

In conclusion it may not be out of place to make a few remarks about cruelty. Cruelty is kindness reversed, and as much cruelty is perpetrated in the name of kindness, and by its technique, as by the recognised methods of cruelty. It consists in giving people what they do not want, and in withholding from them something that they do want. How much of that is done in the name of kindness, and more than ever in the name of Charity? True charity is composed of the two sorts of kindness: that which gives and that also which lets be; and that which lets be is much the rarer of the two. Why? Because in the worship of action and in the anxiety to relieve a painful situation, it is not usually thought that there is as much power in inaction as there is in action: that the former can be as much a manifestation of love as that which tries to do something about it. There is no truer description of kindness, charity, or love, which are all one, than the old familiar text in the Bible:

> Charity suffereth long and is kind; charity envieth not; vaunteth not itself, is not puffed up, doth not behave itself unseemly, seeketh not her own, is not easily provoked, thinketh no evil; rejoiceth not in iniquity, but rejoiceth in the truth; beareth all things, believeth all things, hopeth all things, endureth all things. Charity never faileth; . . .

It would be difficult to find a more perfect description of the acceptance of *not having* and *not doing*, which is the essence of that charity, motivated by love and including kindness. Action itself is the offspring of a love relationship, the child, not one of the parents, and before that relationship takes place both parents *have not*.

Finally, kindness does not maintain a balance: it is an ever-widening circle, but neither the kindness given nor the kindness received attains its full fruition until it circulates, and ultimately comes back to the giver to be sublimed and circulated again on a higher level of the spiral.

"Cast thy bread upon the waters and thou shalt find it after many days . . ."

TRAVEL AND EXPLORATION

To launch a new journal at the public is nowadays an anxious venture, but there can be no doubt of the welcome that awaits the *Geographical Magazine*. Its scope is much the same as that of the *National Geographic Magazine* of America, which has long and deservedly enjoyed a large circulation here as elsewhere. It consists of signed accounts of travel or observations both at home and abroad, and it is illustrated so freely and well that it will appeal to children almost as much as their elders. The first issue, dated May, 1935, contains articles on Abyssinia, the Lake District as a national park, Rajputana, the Arctic air route, the desert highway of North Syria, India's north-east frontier, and the changing face of Amsterdam, while Dr. Brian Maegraith describes, with fascinating photographs, the life of "our stone-age contemporaries" the aborigines of Central Australia. Judging by beginnings, the editor, Mr. Michael Huxley, will be successful in his aim—to make the dry bones of geography live. In so doing he hopes to provide incidentally an understanding of world problems which no other periodical can give.

The *Geographical Magazine* is published by Messrs. Chatto and Windus from 40, Chandos-street, London, W.C. 2, at 1*s*. The annual subscription (post free) is 15*s*., and half of any profits earned will be assigned to a fund for the advancement of exploration and research, and the promotion of geographical knowledge. The trustees administering this fund are to meet under the chairmanship of the president of the Royal Geographical Society.

Appointments

BATCHELOR, G. F. GRANT, F.R.C.S. Eng., has been appointed Honorary Surgeon to the West London Hospital.

DOUGLAS, J. B., M.B. St. And., Chief Assistant in the X Ray Diagnostic Department of St. Bartholomew's Hospital, London.

DUTHIE, R. J., M.D. Aberd., Hon. Assistant Physician to the Aberdeen Royal Infirmary.

JACKSON, HARVEY, F.R.C.S. Eng., Honorary Assistant Surgeon to the West London Hospital.

KEERS, R. Y., M.D. Edin., Second Assistant Medical Officer to the King Edward VII. Sanatorium, Midhurst.

MOORE, A. M. A., F.R.C.S. Eng., Hon. Assistant Surgeon to the Poplar Hospital for Accidents.

MOWAT, G. GORDON, M.B. Camb., F.R.C.S. Edin., Honorary Aural Surgeon to the Royal Infirmary, Bolton.

NORRIE, F. H. B., M.B. Ch. M. Aberd., F.R.C.S. Edin., Hon. Junior Surgeon to the Ear, Nose, and Throat Department of the Aberdeen Royal Infirmary.

NORRIE, F. H. B., M.D., Ch.M. Aberd., F.R.C.S. Edin., Honorary Assistant Surgeon for Diseases of the Ear, Nose, and Throat at the Royal Aberdeen Hospital fo

POCOCK, J. A., M.B. Camb., F.R.C.S. Officer to the St. John's Hospital, Lewisham.

WHALEY, J. B., M.D., D.L.O., Resident Aural Registrar to the Hospital for Sick Children, Great Ormond-street.

WILLIAMS, E. ROHAN, M.D., M.R.C.P. Lond., D.M.R.E., Assistant Medical Officer in Charge of the X Ray Department, St. Mary's Hospital, London.

WOODHAM, C. W. B., M.R.C.S. Eng., Research Officer in the Deep X Ray Therapy Department of St. Bartholomew's Hospital, London.

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced. A.M.O. (I.) and (II.) = Assistant Medical Officer, Grades I. and II.

BAIN, W. I., B.Ch. Camb., A.M.O. (I.), Queen Mary's Hospital for Children.

SCOTT, M. H., M.B. Lond., A.M.O. (I.), Queen Mary's Hospital for Children.

HUGHES, J., B.Ch., A.M.O. (I.), Downs Hospital for Children.

COLBECK, S. C., M.B. N.Z., A.M.O. (I.), Grove Park.

COOPER, P. T., M.B. Camb., A.M.O. (I.), St. Pancras.

ROBSON, J. S., M.B. Belf., A.M.O. (II.), Constance-road Institution.

COOKE, S. C. S., M.R.C.S. Eng., A.M.O. (II.), Dulwich.

STEVENSON, A. C., M.B. Glasg., A.M.O. (II.), Highgate.

BUGGLE, G. A., L.R.C.P. Dub., A.M.O. (II.), Holborn and Finsbury Institution.

SAYCE, A. M., M.B. Wales, A.M.O. (II.), Paddington.

DISNEY, M. E., M.B. Lond., A.M.O. (II.), Queen Mary's, Sidcup.

DRUKER, J., M.B., Ch.B. Manch., A.M.O. (II.), St. Benedict's.

BRUCE, R. D., M.B. Aber kney.

KETTLEWELL, H. B. D. Physician, Hackney.

CAFFELL, T. E., M.B. N.Z., House Physician, St. Alphege's.

BARKER, G. A., M.R.C.S. Eng., House Physician, St. Giles.

CAREY, W. A., L.R.C.P. Lond., House Surgeon, St. Giles.

OVENS, G. H. C., M.R.C.S. Eng., House Physician, St. James.

LENANTON, G. A. R., M.R.C.S. Eng., Clinical Assistant, St. Mary Abbots.

JOHNSON, W. A., M.R.C.S. Eng., House Surgeon, St. James.

HOPKIN, D. A. B., M.R.C.S. Eng., House Physician, St. James.

REID, J. OWEN, M.D. Edin., Senior A.M.O. (I.), St. George-in-the-East.

SIMPSON, W., M.D. Glasg., A.M.O. (II.), St. Alphege's.

MURPHY, F. D., M.B. Irel., Senior A.M.O. (II.), Paddington.

GRAHAM, W. H., M.B. Glasg., F.R.C.S. Eng., Senior A.M.O. (II.), St. Mary's Islington.

CUSSEN, K. R., M.B. Melb., A.M.O. (I.), St. Luke's Hospital, Lowestoft.

JONES, A. N., M.B. Liverp., F.R.C.S. Eng., A.M.O. (I.), Bethnal Green.

GOLDRING, H. J., M.B. Belf., A.M.O. (I.), Lambeth.

SMITH, D. B., M.B. Toronto, A.M.O. (I.), St. Stephen's.

DOUGLAS, A. M., M.B. N.Z., A.M.O. (I.), St. Stephen's.

CUNNINGHAM, A. A., M.B. Dub., A.M.O. (I.), South-Eastern.

Certifying Surgeons under the Factory and Workshop Acts: Dr. M. ZIMMERMAN (Marlow, Buckinghamshire); Dr. R. A. K. WIENER (High Wycombe, Buckinghamshire).

SHEFFIELD ROYAL INFIRMARY.—This institution continues to treat patients to the limits of its capacity, and the total expenditure of £68,031 last year increased by over £3000 as compared with 1933. The income of the hospital shows an increase of well over £9000.

BRISTOL ROYAL INFIRMARY.—There was an increase in both in-patients and out-patients at this hospital during last year. There was also an increase in ordinary income, but the ordinary expenditure exceeded income by over £10,000. Under the heading of extraordinary expenditure the largest item was £2952 for bank charges. The average cost per occupied bed was £2 19*s*. 8¾*d*., as compared with £2 18*s*. 4*d*. last year and £2 19*s*. 9*d*. in the previous year.

ADDRESSES AND ORIGINAL ARTICLES

URETERO-VAGINAL FISTULA*

By A. E. Webb-Johnson, C.B.E., D.S.O., F.R.C.S. Eng.
SURGEON TO THE MIDDLESEX HOSPITAL

It would be difficult to exaggerate the terrible discomfort which a woman must suffer if she has a constant leakage from the vagina as the result of a fistulous communication with the urinary tract. The external genital anatomy of women provides no such convenient arrangement as that with which men are blessed, and the instrument maker has failed to produce an apparatus which will ensure a woman's comfort when she is suffering from urinary incontinence. It follows that she is generally dependent on primitive arrangements in order to absorb the leaking urine and save her clothes and the furniture of herself and her friends from damage. In addition to the discomfort which necessarily results—and this must amount to mental agony in a fastidious woman—the constant presence of a pad soaked in urine, which is often infected, sometimes leads to most distressing soreness of the genitals and thighs.

The surgeon is naturally distressed when he sees a patient in such a miserable predicament, but his distress is magnified a hundredfold when the state of misery is the result of an operation which has been embarked upon with confidence and hope.

The justification for confining my remarks to uretero-vaginal fistula lies in the fact that during the last 23 years I have had to deal with 23 of these cases, and have arrived at certain conclusions as to the best line of procedure in preventing and treating the condition. As I have stated, this serious condition is generally the direct result of surgical intervention. All my cases except one have been the result of a pelvic operation. In the odd one, which was the first I had to deal with, the fistula developed after a difficult parturition, protracted labour, and instrumental delivery.

Injury to the Ureter : its Prevention and Repair

Before considering the question of treatment it will be well to devote a little time to the discussion of the prevention of injury to the ureters and the steps to be taken at the time if the surgeon realises that damage has been done. The uterus, bladder, and lower ends of the ureters are in such close relationship, and the normal anatomical arrangement may be so distorted when the uterus is the site of a tumour, that it is not surprising that the ureter is injured sometimes. Hysterectomy is so frequently performed that one may say that the ureters are in danger almost daily in the hospitals of a large city. Accidental damage still occurs too frequently, and it should be the guiding principle of the gynæcologist that it ought never to occur. In cases of fibroid tumour of the uterus the accident may happen without being noticed, but in Wertheim's operation for carcinoma, in the course of which the ureters are isolated, and maybe their blood-supply imperilled, the surgeon is well aware of the risk being run and has the ureters under his direct observation. In a case of carcinoma it might be impossible to avoid damaging a ureter, but in the operation of hysterectomy for fibroids it should be one of the rarest of all accidents instead of one which is fairly common.

Twenty-one years ago Sir John Bland-Sutton opened a discussion on this subject at the Medical Society of London and the discussion made it clear that the ureters were often injured during the performance of abdominal hysterectomy. The injury may not be noticed. Bland-Sutton expressed the opinion that it is possible and probable that a ureter has been tied in the course of hysterectomy and the patient has recovered without anyone having a suspicion that such an accident has happened. It is indeed true that there may be no serious effect if the urinary tract is free from infection, but it is well to bear in mind that it may be some time before interference with the lumen of the ureters is revealed. I have recently had in my wards a case of nephrectomy for pyonephrosis in a woman who had a pelvic operation three and a half years ago. I doubt not that the obstruction to the ureter which was 1 inch from the vesical orifice was the result of the pelvic operation. While nephrectomy is never undertaken without the most careful investigation of the urinary tract, surgeons must be doubly cautious if the patient has had a pelvic operation.

The ureter has been deliberately tied after accidental division without untoward signs. Numerous gynæcologists have confessed to tying the ureter and dropping it back. This has only to be mentioned to be condemned. Bland-Sutton emphasised the importance of dealing with a cut ureter at the time. As he wittily pointed out—"Kidney tissue is very precious. Many persons get on very well in the world with very little brains and some with none, but no one can live without a certain amount of kidney."

CHOICE OF PROCEDURE

There are various alternatives open to the surgeon when faced with this accident, and it is very desirable that a surgeon who is exposed to the risk of injuring the ureter should be prepared at once to repair the damage. He may attempt end-to-end union or he may graft the ureter into the bladder or into the colon. This last procedure would only be permissible if the injury were high up and a portion of the ureter had been removed. Fortunately, the injury when it occurs is nearly always quite near the vesical end of the ureter. End-to-end union is far from satisfactory. Only when the conditions are very favourable can a satisfactory union be made between the divided ends of the ureter. Moreover, should any narrowing occur it would not be so easily recognised or corrected as in the case of a graft into the bladder. I do not hesitate to say that the surgeon's duty is to implant the divided end of the ureter into the bladder. Great care is required in the performance of this operation, for if plenty of room is not left for the implanted ureter it may become sclerosed by chronic ureteritis which may narrow and even obliterate its lumen. The narrowing may be a gradual process and the obstruction to the ureter may lead to serious hydronephrosis or pyonephrosis after an interval of years.

This risk of narrowing can be avoided or minimised by careful attention to detail. In the first place a useful little manœuvre is to pass long fine forceps along the urethra and make them protrude on to a selected spot on the posterior wall of the bladder. A small incision is made on to the end of the forceps and the ureter drawn into the bladder by a thread which has been attached to it. The ureter can then be sutured to the bladder wall outside and a water-tight junction established. This method of grafting is not so certain of success as making the junction from inside the bladder. The surgeon need not hesitate to open the bladder during the course of an intraperitoneal operation.

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* An address delivered to the Manchester Surgical Society on Dec. 4th, 1934.

If the bladder is opened and the ureter stitched in place from inside the viscus plenty of room can be left for the graft by leaving a gap below the suture line and passing a small drainage-tube through the posterior wall of the bladder into the retro-vesical tissues. The site of entry of the graft on the outside of the bladder can then be made extraperitoneal by suturing the pelvic peritoneum carefully over it.

If the bladder is not opened at the time and the implantation of the proximal end of the ureter is completed from outside the bladder the graft must generally be so closely sutured in position in order to make the junction absolutely water-tight that it is liable to become narrowed. If the implantation has been carried out in this way the graft should be kept under observation for some months and *the opening of the ureter examined at intervals through a cystoscope.* In this way any threatened contraction of the orifice, with the danger of damage to the kidney by obstruction and consequent increased risk of infection, can be recognised and dealt with either by dilating the orifice or, if necessary, by opening the bladder and improving the graft.

The surgeon may be labouring under the handicap that he is reluctant to call attention to the accident, but the interests of the patient demand that the graft should be kept under observation, and therefore the position must be faced and explained.

Treatment of Uretero-vaginal Fistula

I now pass to a discussion of the treatment of uretero-vaginal fistula. This may develop if the ureter has been cut and the injury has not been repaired, or if the blood-supply of the ureter has been so interfered with as to lead to sloughing of the lower end, or if the ureter or part of it has been included in a ligature or suture.

When it is noticed that there is a leakage of urine from the vagina the surgeon has first to ascertain from what part of the urinary tract the leakage is taking place.

First of all he must satisfy himself that the urine is not coming from the bladder. This is not so easy as one might expect. By careful observation and by the injection of coloured fluids into the bladder and ascertaining if any of the fluid finds its way into the vagina this point is however eventually cleared up. Being satisfied that the leakage is not from the bladder the surgeon must next ascertain from which ureter the urine is escaping. Fortunately he may easily get a very helpful clue to guide him in this investigation, for cystoscopy and the passage of a ureteral catheter may soon reveal the side on which the injury has been inflicted. The injured ureter is always obstructed whether it be completely divided or not. There is always obstruction to the passage of a catheter on the side of the fistula if it has been present a few weeks. This clue generally leads quickly to a definite diagnosis in cases following hysterectomy for fibroids, but in cases following Wertheim's operation the position is complicated by the fact that both ureters have been so disturbed and are embedded in such dense scar tissue on the floor of the pelvis that it is often difficult to pass a catheter into either ureter.

Eventually however—perhaps only after several attempts and with the use of very rigid ureteral catheters or bougies, reinforced with metal—a passage is found up one ureter while the other is found to be impassable. The side on which the obstructed ureter is found indicates the side on which the fistula is present.

In spite of the difficulties we may have to contend with in order to be absolutely sure on which side the lesion is situated, we are indeed fortunate compared with our forbears. A reference to Sir Henry Morris's Hunterian lectures delivered at the Royal College of Surgeons a short 36 years ago makes one realise the great advantages under which we work to-day. At that time it was computed that in any hundred hysterectomies, vaginal and abdominal, one or both ureters were tied or cut across in at least three. And Spencer Wells in 1881 stated that out of 94 published abdominal hysterectomies one ureter had been divided in six, and both ureters in two other cases. For these injuries nephrectomy was performed and in many instances healthy kidneys were removed. It would be bad enough to be misled as to the injured side at the present day and to proceed to expose the wrong ureter, but how tragic it must have been in the days of which Morris spoke, when nephrectomy was the accepted remedy and there were not the same facilities for diagnosis that we possess to-day.

In speaking of the difficulties experienced by surgeons trying to identify the kidney which was in connexion with the fistula Morris reported the following case:—

> "A woman who had undergone vaginal hysterectomy by a distinguished gynæcologist recovered with an uretero-vaginal fistula. The patient was handed over to a distinguished general surgeon to be cured of this fistula. Efforts were made in a most careful manner to ascertain which ureter it was which had been wounded and become entangled in the vaginal cicatrix. These failing to afford definite information, the ureter of the suspected kidney was exposed through a lumbar incision and was temporarily ligatured. During this experiment, which was of course made under chloroform, no urine escaped by the vagina, but a certain amount was withdrawn by catheter from the bladder at the expiration of a given time. The inference was that the ureter temporarily ligatured was the one involved in the vaginal fistula; so the corresponding kidney was there and then excised. Imagine the surgeon's chagrin, and the patient's distress, the next day when it was discovered that, though she had lost a healthy kidney, the operation had not cured her of the fistula; for the wrong organ had been removed."

Having ascertained which side is affected what should be done next? In 3 out of my 23 cases I have had the good fortune to force a catheter up an obstructed ureter with removal of the obstruction, followed by closing of the fistula. This experience leads me to recommend that serious efforts should always first be made to dilate the obstructed ureter through the cystoscope if exploration gives the least sense of the ureteral catheter or bougie being engaged in a stricture. The surgeon may notice after prolonged efforts, perhaps with a ureteral bougie or catheter which has been made more rigid by metal being interwoven in its structure, that the instrument is not easily withdrawn, giving the same sensation as that experienced when a gum-elastic bougie has become firmly engaged in a urethral stricture but has not passed through it. Further efforts may result in the passing of the catheter and cure may be expected.

If disappointment attend these attempts then the bladder should be opened.

The best results are to be obtained by resecting the lower end of the ureter through the bladder up to the site of the fistula and suturing the ureter into the bladder at a point above the fistula. The great advantage of an approach through the bladder is that, when the implantation is made, ample room can be left for the grafted ureter and all danger of the development of a narrow orifice avoided. On opening the bladder the previous observations are confirmed by passing a catheter up the intact ureter. A catheter is then passed on the fistulous side up to the site of obstruction. An incision is then made round the lower edge of the ureteral orifice and continued up the bladder wall. The lower end of the ureter is identified and dissected up until the fistula is reached. The lower part of the ureter, including the fistula, is then cut off and the divided end of the ureter is loosely sutured into the base of the bladder. A small drainage-tube is passed through the bladder wall below the implanted ureter into the retro-vesical tissues and fixed in position by a catgut suture, and a catheter is left in the ureter. The rest of the wound in the base of the bladder is closed and the bladder is drained through the suprapubic wound. The small tube draining the retro-vesical space is brought through the suprapubic wound and the ureteral catheter through the urethra. The ureteral catheter is removed in two days' time. The small tube is removed as soon as it becomes loose, and the bladder tube at the same time.

Convalescence is usually uneventful and the result a perfect and permanent cure. The operation is one of some delicacy and difficulty and takes some time to perform. It is more tiring and exhausting for the surgeon than for the patient, for in spite of the time it takes to complete the operation it is not associated with any shock.

This is what I consider the ideal way of dealing with these cases and in my opinion it should always be attempted. Sometimes it cannot be accomplished. This is more likely in the cases resulting from Wertheim's operation. After Wertheim's operation an incision through the base of the bladder leads into dense fibrous scar tissue in which it is always difficult and sometimes impossible to identify the ureter. If the surgeon fails to dissect out the ureter he should not hesitate to open the peritoneal cavity. He can then trace the ureter down to the floor of the pelvis and draw the lower end into the bladder through an incision in its posterior wall placed as low down as possible. It is helpful to attach a thread to the lower end of the ureter to assist in pulling it through into the bladder. The peritoneum over the pelvic floor should then be carefully sutured and the peritoneal cavity closed. The surgeon can then proceed to deal with the implantation of the ureter from inside the bladder as already described.

In some cases when the ureter is isolated it is found to be dilated. This need not deter the surgeon from proceeding with the implantation provided the patient has not shown symptoms of severe kidney infection. Unfortunately the patient may not reach the surgeon until signs and symptoms of renal infection are well marked—pyuria, pyrexia, and pyelonephritis, and perhaps pyonephrosis. In such cases nephrectomy is indicated unless symptoms subside rapidly under treatment with urinary antiseptics.

In four of my cases the kidney has had to be removed because pyonephrosis had developed. It has been indeed a Delian sacrifice and has led me to urge that these cases should be dealt with early, when there is much more likelihood that success will follow attempts at catheterising the ureter; operation, if necessary, will be easier than at a later date and the kidney will probably be saved. I have been able to pass a ureteral catheter on one patient comparatively easily when the fistula had only been present for a week and my colleague, Mr. E. W. Riches, has had a similar experience. Cure followed in both cases, though perhaps cure should not be attributed solely to this intervention as the leakage is sometimes only temporary. I have already mentioned cases in which I was successful in this manner and in one of these it was several weeks after Wertheim's operation. I still think, however, that the sooner the attempt is made after the development of the fistula the more likely it is to be successful. If the attempts to pass a ureteral catheter fail, operation for implantation of the ureter should not be proceeded with at once as the leakage may cease spontaneously, but operation should not be delayed more than a few weeks.

Conclusions

My experience leads me to the following conclusions: 1. All uretero-vaginal fistulæ should be dealt with as soon as possible after being diagnosed. 2. In the first place prolonged and even repeated attempts should be made to catheterise the ureters. 3. On the injured side obstruction is always found to the passage of the ureteral catheter when the fistula has been present for any length of time. 4. If catheterisation fails the implantation of the proximal end of the ureter into the base of the bladder by an intravesical operation gives the best prospect of cure. 5. This implantation can be successfully carried out if the case is seen early, but after Wertheim's operation it becomes increasingly difficult as time passes and dense scar tissue develops. 6. In the event of failure to complete the graft by an intravesical operation the peritoneal cavity should be opened, the ureter isolated, and the grafting operation begun from outside and completed from inside the bladder. 7. In seriously infected cases the best procedure is nephrectomy through a lumbar incision.

The cure of this unfortunate disability may require all the skill, patience, tact, and determination to succeed with which the surgeon may be endowed. When success attends his efforts he will receive deep gratitude from the patient who has been relieved of a condition which was making life almost unbearable. If the surgeon has succeeded in curing the patient without the loss of a kidney he will in addition have the satisfaction of knowing that he has left her not only relieved of her distress but still endowed with her full renal efficiency.

TREATMENT OF PUERPERAL FEVER BY ANTISTREPTOCOCCAL SERUM

SOME NEW EVIDENCE AND A RETROSPECT

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Critical judgment of the effect of any treatment will of necessity be very difficult in many of these conditions, for some of them—e.g., the infections which remain localised to the genital tract—carry a very high spontaneous recovery-rate (nearly 100 per from inside the bladder. The surgeon need not hesitate to open the bladder during the course of an intraperitoneal operation.

If the bladder is opened and the ureter stitched in place from inside the viscus plenty of room can be left for the graft by leaving a gap below the suture line and passing a small drainage-tube through the posterior wall of the bladder into the retro-vesical tissues. The site of entry of the graft on the outside of the bladder can then be made extraperitoneal by suturing the pelvic peritoneum carefully over it.

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Critical judgment of the effect of any treatment will of necessity be very difficult in many of these conditions, for some of them—e.g., the infections which remain localised to the genital tract—carry a very high spontaneous recovery-rate (nearly 100 per cent.); while in others—e.g., fully generalised peritonitis and endocarditis—it is hardly to be expected that any therapeutic agent could overtake the infection. Moreover, these varied pathological conditions are now known to be produced by very different microbes. The hæmolytic streptococcus is responsible for about half of them; anaerobic and other types of non-hæmolytic streptococci, *B. coli*, staphylococcus, and other organisms are responsible for the rest. There is no doubt (vide Table, p. 1087) that during all these 40 years antistreptococcal sera have very often been employed in circumstances which did not allow of a *specific* curative effect.

The sera themselves have varied considerably. For about 30 years following Marmorek's[1] work (1895) most workers aimed at producing a serum which was primarily *antibacterial*—i.e., one which would control the invasion of the tissues by the cocci. The possibility—and desirability—of producing an *antitoxic* serum was, however, not lost sight of (Marmorek, Aronson,[2] 1902), but the earlier attempts in this direction were not very successful. Since the war recognition of the fact that an exotoxin of the hæmolytic streptococcus ("Dick toxin") is produced in the human body—during scarlet fever, at any rate—and that this exotoxin can be neutralised, both in vitro and in vivo, by a highly antitoxic serum, has stimulated the hope that better therapeutic and prophylactic results might be achieved by such a serum than had been obtained with the antibacterial sera. The selection of good toxin-producing strains of streptococci for the immunisation of the horses, and the improvement of technical methods for the concentration of the antitoxic fraction of the serum, have given us sera of much greater potency than those of earlier days, and these sera have been extensively employed in the treatment of puerperal fever for the past ten years. Many reports of individual cases, or of very small series, have been published, but these are of very little evidential value. On a broad view it may be said that those who have had most experience have been least convinced as to the efficacy of these sera. An analysis of a large series of cases, treated and untreated, by Benson and Rankin[3] will be referred to later.

On the hypothesis that the toxins of puerperal fever strains might differ somewhat from those of scarlet fever, some laboratories have prepared sera from toxigenic puerperal fever strains.

Warnekros, Louros, and Becker[4] reported 200 cases of puerperal fever treated with such a serum without a death. The cases are described as severe (*schwere*) but the clinical data given are extremely scanty. We are not told whether there were any cases of peritonitis nor how many of septicæmia (hæmolytic streptococci in blood culture); nor indeed how many cases were infected by that microbe. Nor is there any estimate of the recovery-rate in a comparable series of unselected cases not treated by serum. From the fact that 4 of the 6 patients whose temperature charts are reproduced (presumably among the most severe) are stated to have had *no microbes in the blood*, while the 2 remaining cases grew respectively three and five colonies from the blood, it seems probable that a large proportion of the cases presented merely a localised infection which normally carries a recovery-rate of approximately 100 per cent.

In 1928 Gaessler[5] reported a further 400 cases from the same clinic with 20 deaths; 299 of his cases were admitted with little or no fever on account of difficult labours but subsequently became more or less febrile. In this series, as in the former, there was no distinction between cases infected by hæmolytic streptococci and those which were not, and the very meagre clinical data do not permit of any judgment as to the effects of the serum. Later reports do not seem to support these first claims to success.

Still more unsatisfactory as a statistical study is the analysis by Lash[6] (1929) of 57 cases treated with a similar serum made from puerperal fever strains. The death-rate among these cases was 32 per cent., but this compared favourably with that of a control group (treated in other ways) of 13 selected cases which showed a death-rate of 61 per cent. Fortunately details are given of these control cases, and it is seen that they comprise 8 cases of septicæmia and 7 of "peritonitis or beginning peritonitis"—scarcely a representative sample of ordinary puerperal infections.

In 1929 H. Vincent[7] introduced a "new" serum which has been extensively used in France. The method of its manufacture has not been disclosed, but there seems no reason to suppose that it rests on any new principle. No evidence has been given that it can either prevent or cure an infection by hæmolytic streptococci in animals, but in a recent paper Vincent[8] (1934) has claimed that by the use of enormous doses (1300 c.cm. in one child) no less than 180 (82·5 per cent.) of a series of 218 cases classed as "septicæmia and meningitis" have been cured. This remarkable *claim demands careful examination.* Such examination shows that there has not been personal observation of the cases. They have been collected from the numerous published reports of the medical press of France and other countries and of reports of cases sent to him privately. The published reports deal almost invariably with one or occasionally two cases of recovery, and they attribute that recovery unequivocally to the serum even when many large doses were required before the temperature fell. Frequently other forms of treatment were *employed at the same time.* These *individual* case reports tell us nothing at all about other cases treated who have not recovered.

In assessing the value of such evidence I think one should not forget that many medical men will publish individual successes while few will broadcast failures. It might well be that if *all* the cases of "septicæmia and meningitis" treated by this serum were faithfully recorded the result would be very different. Again, there is some doubt as to the sense in which Vincent uses the words "septicæmia and meningitis." He does not tell us categorically in how many cases hæmolytic streptococci were grown from the blood, nor in how many from the cerebro-spinal fluid, but he does *mention in a footnote that some* cases were included although their blood culture was negative. His claim that the recovery of the 180 cases was due to serum and not to "natural causes" appears to rest, however, on the summary statement that "Le septicémie à streptocoques comporte un pronostic fatal" (1929).*

That statement does not agree with my personal experience of hæmolytic streptococcal septicæmia (with positive blood culture). With Dr. R. Hare I[10] have reported (1934) 19 such cases (excluding cases of generalised peritonitis) observed during the years 1928–33 which showed a *recovery-rate* of 41 per cent.; and in a further series of 15 such cases observed during 1934 at Queen Charlotte's Hospital no less than 11 have recovered (73·3 per cent.). Seven of these 15 cases gave a positive blood culture on more than one occasion, and five of the seven recovered. In none of these cases was specific treatment used. The recovery-rate of 73 per cent. is probably quite unusual, but *it serves to* show how cautious one should be in attributing recovery in septicæmia to any particular remedy.

My impression after a careful study of these clinical reports—and of many which preceded them—is that none of them justify the conviction that anti-streptococcal sera have really shown an indubitable effect upon the puerperal infections by hæmolytic streptococci. (I am purposely excluding scarlet fever from this survey, partly because I have no experience of it, and also because the rationale of treatment by an antitoxic serum in that disease is on quite a different footing.) If such a curative effect is to be clearly demonstrated in the human subject, it must be by application of the treatment to large groups of cases known to be infected by hæmolytic streptococci, and by critical comparison of their records with those of cases similarly infected but untreated. Both groups must be under the direct observation of the same individuals and the bacteriological data should be obtained in the same laboratory.

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* In a later paper, 1934 (*b*), Vincent[9] admits that spontaneous recoveries from streptococcal septicæmia do occur but that they are "très exceptionelles."

Investigations of this kind carried out for the first time during the last few years will now be described.

Benson and Rankin (1933) have reported upon 114 puerperal cases observed in Edinburgh. Half of them had received serum and half had not. The two groups comprise all the cases from whom a positive blood culture (hæmolytic streptococcus) was obtained during a period of several years. (It is important to note, however, that many of the serum-treated cases were only found to be "blood positive" at some period *after* the commencement of serum treatment.—Personal communication from Dr. Benson.) In 28 per cent. of them the treatment was commenced within 48 hours of the onset of fever. Of the 57 serum-treated cases 37 received scarlet fever antitoxin and 20 "puerperal antistreptococcus serum" (which also contained some antitoxin). The authors state that both sera were manufactured by Messrs. Burroughs Wellcome and Co. In 74 per cent. of the cases the serum was given intravenously as the makers recommend. The mortality-rate in the 57 serum-treated cases was 75 per cent. as compared with 68 per cent. in the control group. In view of the "several days of misery in the form of serum sickness," the great expense (nearly £300 for the 57 patients) and the absence of any evidence that the treatment had any beneficial effect, the authors recommend that the giving of serum "faute de mieux" ought to be discontinued.

Experience of Serum-treated Cases at Queen Charlotte's Hospital

Comparison of 69 *cases treated with antistreptococcal or antiscarlatinal* (*antitoxic*) *serum before admission to Queen Charlotte's Hospital with other cases not so treated* (1930–34).

CASES TREATED BY SERUM

Infected by hæmolytic streptococci	40 (58 per cent.)
Not infected by hæmolytic streptococci ..	29 (42 „ „)

ALL CASES OF PUERPERAL PYREXIA ADMITTED TO HOSPITAL

Infected by hæmolytic streptococci	60·8 per cent.
Not infected by hæmolytic streptococci ..	39·2 „ „

DEATH-RATE OF THE SERUM-TREATED CASES AND OF THE CASES WHO HAD NO SERUM

—	Cases	Deaths	Case-mortality (per cent.)
All cases treated with serum before admission	69	21	30·4
All cases who had no serum ..	932	108	11·6
Hæmolytic streptococcus cases— Treated with serum	40	18	45·0
Treated without serum ..	346	70	22·3

Antistreptococcal sera have not been used at the Isolation Block of Queen Charlotte's, but 69 cases during the last four years had been given serum before admission. Most of them were sent in by private doctors and they came from all parts of the Greater London area.

Certain data obtained from the records of these 69 cases—and of the cases who received no serum—are shown in the Table.

COMMENTS ON THE TABLE

(1) It is unfortunately not possible to give complete and entirely reliable data as to the exact kind of serum used in every case, its amount, or the route by which it was administered, because there was often difficulty in getting all these details from the doctor who sent in the case. So far as the records serve they show that the serum was always derived from laboratories of good repute; that 39 cases got "antistreptococcal serum" and 30 scarlatinal (antitoxic, concentrated) serum. One case had both. Thirteen cases had more than one dose. The amount of serum varied from 10 c.cm. to 140 c.cm. In most of the cases it was given intramuscularly.

(2) Since the 69 cases were treated by serum before admission to the hospital it is not possible to describe their condition at the time when the treatment was begun. In about 75 per cent. of the cases the first injection was given within 48 hours after the onset of fever—often within 24 hours. After admission to the hospital all cases were treated on precisely the same lines. Glycerin was usually instilled into the uterus several times daily for the first few days and the patient's strength maintained by good feeding and nursing. In the great majority no specific treatment of any kind was used.

(3) It will be seen that over 40 per cent. of the cases treated by serum were not infected by hæmolytic streptococci and were therefore subjected to the risk of serum sickness without any prospect of a specific immunising effect.

(4) The mortality-rates for the 69 cases treated by serum and for all cases who had no serum show a very big difference, but it would be a mistake to attach much importance to this, because these two groups are obviously unsatisfactory statistical material. Both include many cases not infected by hæmolytic streptococci and also a certain proportion of cases in which the fever was really of extra-genital origin—e.g., cases of urinary infection, mastitis, bronchitis, and so forth. It is of interest to note in passing, however, that an examination of the published records of similar unselected cases of puerperal infection by a committee of the American Gynecological Society [11] in the early days of serum treatment (1899) gave very similar figures: 352 serum-treated cases showed a mortality three to four times as high as 138 cases which had no serum. The committee rightly recognised that the data were not entirely reliable and did not therefore permit of very emphatic statement of conclusions. Nevertheless it ventured the opinion that more patients were dying from the treatment than from the disease.

(5) The figures that merit most consideration are, of course, those showing the mortality-rates in the two groups infected by hæmolytic streptococci. Clearly it is difficult to deduce from them that the treatment by serum had any beneficial influence upon the infections—and this in spite of the fact that in 75 per cent. of the cases serum was given within 48 hours of the onset of fever—often indeed within 24 hours.

The important question remains, Did the serum actually, as the figures suggest, contribute to the unusually high death-rate among the 40 cases? This is such a serious issue that the data demand the most critical scrutiny.

I have considered the following possible sources of fallacy :—

(*a*) *That serum was given only to the cases who seemed most gravely ill.*—This consideration may well have been operative in a small number of the cases but not, I think, in a large proportion of them. My reason for that opinion is as follows : it is well recognised by all who have much experience of puerperal fever that the cases most gravely ill during the first week are those infected by hæmolytic streptococci. If serum had been reserved for these most severe cases one would expect to find a very high percentage (not less than 80 per cent.) of infections by hæmolytic streptococci among the 69 cases so treated. But only 58 per cent. were so infected—a figure actually a little lower than that for all cases admitted to the hospital. No less than 29 of the 69 cases, although they were given serum, had not an infection by hæmolytic streptococcus, and, as is usual in such cases, these 29 cases carried a low mortality-rate (10 per cent.). Moreover, a survey of the records of the 40 hæmolytic streptococcus cases treated by serum shows quite clearly that many of them were never gravely ill.

In my opinion therefore we must conclude that the whole 69 serum-treated cases represent just an average sample of febrile disturbances in the puerperium ; and that most of them were given serum because they happened to be in the care of a medical man who believed that as soon as a woman developed fever in the puerperium it was best to employ that remedy. Even, however, if we suppose that 5 of the 40 hæmolytic streptococcus cases were given serum because the clinical condition was judged to be unusually serious, and that all the 5 died, *there still remains a mortality-rate of 37 per cent. for the* other cases whose selection was probably not determined by this special consideration.

(*b*) *That the 40 serum-treated cases were admitted on the average somewhat later than those who had no serum—and for that reason did not gain such benefit as may accrue from the routine treatment and specialist care in this hospital.*—It has been our experience that early admission—particularly of the cases infected by hæmolytic streptococci—is definitely correlated with a high recovery-rate. On working out the time of admission of the serum-treated and other cases, however, it does not appear that this consideration can have influenced the mortality-rates shown in the Table. The 69 serum-treated cases were admitted on the average 7·8 days after labour ; the 40 hæmolytic streptococcus cases 8·0 days ; the 18 fatal hæmolytic streptococcus cases 7·8 days ; and 76 control cases, consisting of 19 consecutive cases chosen at random from each of the four years, 7·8 days.

(*c*) *That many of the infections among the 40 serum-treated cases had occurred in epidemics or during periods when the prevalent infections were of an unusually severe type.*—Actually only 4 of the 40 serum-treated cases originated in small epidemics (and 2 of them recovered). Both serum-treated and control groups were made up chiefly of sporadic cases spread over the four years. The mortality-rate among the 346 cases infected by hæmolytic streptococci never rose above 28 per cent. for any one year.

My opinion, after full consideration of these possible fallacies, is that the greatly increased mortality-rate in the serum-treated cases was due either to the serum having exerted an unfavourable effect—turning the scale against their recovery—or to the operations of chance. Choice between these alternatives is not easy. On the one hand, it is obvious that very many and very large doses of serum have been repeatedly given to human beings without apparent harm. On the other hand, evidence is not lacking which indicates that the injection of a foreign serum may sometimes be definitely prejudicial to infected human beings and animals. A. Jousset[12] (1924) and P. Courmont[13] (1934) have emphasised these adverse effects in connexion with experimental tuberculosis (guinea-pigs) and with phthisis in man.

The most striking evidence relating to streptococcal infections is that of Penfold and Butler[14] (1932), who observed that both normal horse serum and antistreptococcal sera, given to mice at the same time as a dose of living streptococci, would sometimes hasten the death of the animals. The conditions in the infected human subject under treatment by serum are admittedly quite different from those of the mouse experiments and it does not therefore follow that the therapeutic sera will necessarily exert a similar effect in the two cases, but, until we have more understanding of the mechanisms involved, that possibility cannot be ignored. Pointing in the same direction is the recent warning by B. Schlesinger[15] (1935) against the danger of giving antistreptococcal sera to children with acute rheumatism which in his experience is not infrequently "reactivated" by such treatment.

All this evidence, taken together with the well-known, but little understood, "toxic" effects of horse serum, ought, I think, to be taken into account before we subscribe to the dictum so often expressed that "*a dose of serum can at any rate do no harm.*" Can we be sure that an agent capable of causing such profound disturbances as those associated with anaphylaxis, serum sickness, and agglutination of red corpuscles (the extreme degree of incompatibility between horse serum and human reds does not seem to have been generally recognised), will not sometimes have an adverse effect upon the complex mechanisms concerned in immunity to infective diseases ? I would suggest that our view of serum therapy has in the past been somewhat unbalanced. We have focused attention too exclusively upon its antitoxic or antibacterial qualities and rather lost sight of the "toxic" potentialities which have to be set off against them. The possible benefits of passive immunisation probably must always be paid for. Sometimes, as in the case of diphtheria antitoxin, the price may be well worth while—in other cases, as perhaps in the case of antistreptococcal serum, it may be too heavy.

At Queen Charlotte's, if we had given serum to all cases infected by hæmolytic streptococci, and if they had had the same death-rate as in the 40 cases so treated before admission (vide Table), there would have been approximately 86 more deaths than actually occurred during the years 1930–34.

Experimental Basis of Treatment by Antistreptococcal Serum

It would not be profitable to set out in full the results of a critical survey of all the experimental work published in connexion with antistreptococcal serum, because so many points are left in doubt and require reinvestigation in the light of new knowledge about the group of hæmolytic streptococci. The following brief summary and references may, however, be useful :—

PROTECTION EXPERIMENTS

(1) By the immunisation of horses, rabbits, and sheep, sera have been obtained which, when given some hours in advance of the infecting dose, would protect mice and rabbits against 1000–100,000 M.L.D. of the strain used for immunisation (Marmorek, Bordet,[16] Aronson, Neufeld,[17] Simon,[18] Dochez, Avery, and Lancefield,[19] Yoshioka,[20] Lancefield and Todd[21]).

(2) It appears that these highly effective sera have only been produced with streptococcal strains of exceptional virulence, resulting from frequent passage through animals.

(3) Some of these protective sera were active against other strains of hæmolytic streptococci than that used for the immunisation of the horses (Sommerfeld,[22] Neufeld (1903), Simon) ; and it is possible (although not proven) that these other strains were sometimes of different serological type. On the other hand, the work of Dochez,

Avery, and Lancefield strongly suggests that the protection afforded by such sera is strictly type specific.

(4) It is not clear that the protective sera thus obtained by immunisation with highly virulent "passage strains" have ever been effective against strains of moderate or low virulence such as are habitually isolated from human infections—e.g., puerperal fever, surgical sepsis, &c.

(5) The mechanism of protection by the highly active sera has not been adequately established, but the work of Bordet, and particularly that of Neufeld and Rimpau,[23] seems to show that their capacity to render the very virulent streptococci susceptible to phagocytosis ("bacteriotropin effect") is a very important factor.

(6) Sera produced by the injection of toxigenic cultures of hæmolytic streptococci, or by filtrates of such cultures, into animals, are capable of neutralising that toxin both in vitro and vivo (Parish and Okell,[24] Hartley,[25] Pulvertaft[26]). When a potent antitoxic serum is injected into rabbits in advance of a large dose of an avirulent culture containing such toxin, the life of the animals is prolonged, or sometimes saved (by virtue of the neutralisation of the toxin), but infection of the tissues is not prevented (Parish and Okell). (It may be mentioned also that the active immunisation of human beings by Dick toxin does not render them immune to infections by hæmolytic streptococci—as judged by the incidence of tonsillitis among the immunised staffs of fever hospitals (Benson and Rankin,[27] 1934).)

(7) The commercial sera issued in recent years have at best only a very slight protective action against hæmolytic streptococci freshly isolated from acute septic infections of man even when they are given some hours in advance of the infection. When given at the same time as the infecting dose of streptococci they occasionally prolong the life of the test animals by a few days, more often they show no effect at all, and sometimes they definitely hasten death (Penfold and Butler).

CURATIVE EXPERIMENTS

Besredka [28] (1904) and Aronson (1905) record that a highly protective serum obtained by the immunisation of horses with a very virulent "passage strain" was able to overtake a rapidly fatal septicæmic infection of mice if it was given within 12–24 hours after the infecting dose of homologous culture. Repetition of the serum dose was sometimes necessary. Besredka's statement is the more precise. He says that 1/40–1/400 c.cm. of serum would suffice to save mice infected 18–24 hours previously with 2000 M.L.D. of culture.

I have failed to find evidence that the commercial sera now available have the slightest *curative* effect in infected animals.

IN VITRO EXPERIMENTS

The antistreptococcal and antitoxic sera at present available have not been shown to possess any bactericidal power. Hæmolytic streptococci will grow in them. Nor have these sera any power to promote the phagocytosis of virulent streptococci (bacteriotropin effect) (R. Hare [29]).

I believe it is correct to say that most of the laboratories producing these sera do not test them at all for any antibacterial (as opposed to antitoxic) properties.

Conclusions

1. There is no trustworthy clinical evidence that the administration of antistreptococcal serum for the treatment of human infections by hæmolytic streptococci has had any specific curative effect. (A possible effect on the *toxic* manifestations of scarlet fever is purposely excluded from this statement.)

2. The evidence obtained in puerperal fever cases at Queen Charlotte's Hospital suggests that such administration may sometimes have an *unfavourable effect* upon puerperal infections by hæmolytic streptococci; and this impression is to some extent supported by the evidence of animal experiments. All our experience carries the lesson that it is in the best interest of the patient suffering from an infection by hæmolytic streptococci not to interfere with her immunising mechanisms (about which we know so little as yet) until we can be sure that such interference does not do harm.

3. Although sera have been produced which would protect animals against infection by streptococci of artificially enhanced virulence, there is no satisfactory evidence that a serum has ever been produced which would afford more than very slight protection (occasionally) against hæmolytic streptococci freshly isolated from acute human infections and of various serological types.

4. Similarly there is no evidence that any antistreptococcal serum has ever exerted a *curative* effect in animals infected by such hæmolytic streptococci freshly isolated from human infections.

5. It is a matter for regret that antistreptococcal sera should have been issued for clinical trial so long before satisfactory experimental evidence as to their curative effects in animals was available—or a strong presumption existed (from unequivocal in vitro experiments) that such a curative effect would be obtained in man. Until our knowledge of immunisation against the hæmolytic streptococci has progressed further it would seem desirable to discontinue the use of antistreptococcal sera in the treatment (and prophylaxis) of puerperal fever and "surgical sepsis."

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WORTHING HOSPITAL.—The governors of this hospital, with the financial support of the borough council and the West Sussex county council, have authorised the preparation of plans for a maternity block designed as a self-contained unit with independent lighting and heating systems. Of the ten beds to be provided, half will be at the service of the borough and county councils. The building is to be planned so that the number of beds may be increased to 16. The patients will be nursed by a staff of fully qualified midwives who will be lodged and boarded on the new premises. The proposed cost is £12,000. Of this sum, £8000 is either in hand, or promised, including £1000 from each of the two councils. The accounts of the hospital for the year showed a deficit of £630, and if £2010 received from legacies had not been put into revenue the debit balance would have amounted to £2640.

FURTHER STUDIES ON THE ÆTIOLOGY OF ACUTE RHEUMATISM

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The search for a causal bacterium in acute rheumatism is at present mainly concentrated upon the hæmolytic streptococci. A direct demonstration that these organisms are constantly present in rheumatic inflammatory lesions would be convincing, but the results of different workers are not in agreement. This divergency has led to other methods of approach to the problem. In most of the recent investigations the search for bacteria in the affected tissues is abandoned and the indirect method of demonstrating immunity reactions to hæmolytic streptococci is employed.

Agglutination, complement-fixation, and precipitin reactions have all been used for this purpose (Coburn and Pauli, 1932). Even more delicate and specific are the tests for antihæmolysin (Todd, 1934; Griffiths, 1934), antistreptolysin (Myers and Keefer, 1934), and antifibrinolysin (Hadfield, Meager, and Perry, 1934). It is important to realise, however, that these immunity reactions are not specific to rheumatism but appear in the blood during convalescence from scarlet fever, erysipelas, acute streptococcal tonsillitis, and indeed after any acute streptococcal infection. Similar reactions in patients with acute rheumatism cannot then be taken to indicate anything beyond proof of a recent infection with hæmolytic streptococci.

In a previous communication (Schlesinger and Signy, 1933) we showed that it was possible to demonstrate streptococcal precipitins in the blood of rheumatic patients two to four weeks after the onset of a nasopharyngeal infection. The time at which these appeared thus corresponded to the end of the "silent period." The type of precipitin produced corresponded to the type of streptococcus responsible for the throat infection, although a certain amount of cross-precipitation occurred. Cases which relapsed with acute rheumatism gave the most marked precipitin reactions, and the question was raised whether a positive precipitin reaction might not be taken as an indication that a rheumatic relapse was to be expected. Here the matter was left to await further research into the whole question of precipitin formation following streptococcal tonsillitis.

Present Investigation

Our previous experiments were conducted with filtered saline extracts of ground-up streptococci ("endotoxin"). A natural presumption was that certain constituents of the bacterium would be found to have particularly strong precipitogenic properties. The present investigation deals with this problem, and also attempts to discover the principal factors involved, particularly in what way the reaction might be peculiar to acute rheumatism.

Of the various bacterial parts the carbohydrate fraction of the streptococcus has been consistently found to possess such poor antigenic properties that we have concentrated on the protein fractions. By the process described in the Appendix to this paper, two distinct nucleoprotein fractions were obtained—an acid and an alkaline extract—and precipitin reactions carried out with each. These extracts were derived from the following three organisms, and tests were performed with each, as far as possible in the same patient for the sake of comparison.

1. A hæmolytic streptococcus obtained from the throat of a patient with virulent rheumatism "(Carter streptococcus"), hereafter referred to as H.S.
2. A scarlet fever streptococcus, hereafter referred to as S.F.
3. A *Streptococcus viridans* obtained from the blood culture of a case of subacute bacterial endocarditis, hereafter referred to as V.

Tests were also carried out with the globulin and albumin fractions obtained, undenatured, from ground-up cocci. (See Appendix.)

In the first series of experiments 30 rheumatic patients were investigated after an attack of acute pharyngitis which was not followed by a definite rheumatic relapse. The patients' sera were tested for precipitins at intervals during a period of two or three months, using the technique described in our previous paper.

After a while it was noticed that nucleoproteins prepared from different batches of the same cultures of streptococci varied in their antigenic properties, although the technique used in their manufacture was identical. This meant that a series of comparable precipitin reactions in one patient could only be expected if the same batch of antigen were employed throughout.

PRECIPITIN REACTIONS IN RHEUMATIC PATIENTS FOLLOWING ACUTE TONSILLITIS OR PHARYNGITIS

In 9 out of the 30 cases the results obtained were considered unreliable owing to the reason just mentioned. In the remaining patients the same batch of nucleoprotein (Batch L) was used throughout in 15 cases and another batch (Batch 1A) throughout in a further 6 cases (see Table I.).

Table I.—*Precipitin Reactions*

—	Nucleoprotein.		Total.
	Batch L	Batch 1A	
Number of cases	15	6	21
Positive reactions	12	6	18
Negative reactions	3	0	3
Time of appearance following acute tonsillitis—			
(1) Between 10th and 30th day	9	3	12
(2) During 1st week	3	3	6
Final precipitin test—			
(1) Precipitin absent	10	4	14
(2) Precipitin still present ..	2	2	4

Throat cultures taken during the attack of acute tonsillitis showed the presence of hæmolytic streptococci almost invariably except in the three patients with negative precipitin reactions, from whom indifferent streptococci unrelated to the three antigens used were cultivated. The time at which precipitins appeared in the blood stream is of some interest. In

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* All working with a grant from the Harmsworth Research Fund.

12 of the 18 cases the characteristic immunological response developed during the second and third weeks after infection. In the remaining 6, precipitins were found present very shortly after the tonsillitis, during the first week. Two opposite types of reaction were observed in this last group:—

(1) An increasing degree of precipitin formation during the four consecutive weeks following the tonsillitis (3 cases).

(2) The strongest reaction observed immediately, waning during the ensuing weeks (3 cases).

This observation and also the fact that precipitins usually disappeared in the end suggest that the reaction, although present early, was again an immunological response to the preceding tonsillitis and not an inherent property of these sera. As a rule precipitin was only demonstrable for a period of one month, but in one or two cases it persisted for several months. Occasionally a return of precipitin was noted two to three months after the tonsillitis, long after the original reaction was over and the patient's serum had been negative for some time. Such instances are not included in the analysis just given and their significance is not understood.

DETAILS OF PRECIPITATION

Reference has already been made to the varying potency of the different antigens used. Details of the individual tests which follow (Table II.) make it quite apparent that the acid nucleoprotein extract of the "Carter" hæmolytic streptococcus (HS.D.) gave the largest number of precipitin reactions. Tests with bacterial globulin and albumin showed that both components have antigenic properties, although the globulin element appeared to be the more potent. It is interesting to note that when doing skin tests with these extracts, the best reactions were obtained with the alkaline extract (HS.E.).

TABLE II.—*Details of Tests*

Case.*	Throat culture. (tonsillitis.)	Antigens.						
		HS.D.	HS.E.	SF.D.	SF.E.	V.D.	V.E.	A.G.
1	Hæm. strep.	+	+	+	..	..	..	..
2		+	..	..	..	..	..	tr.
3		+	+	..	..	+	..	..
4		+	..	+	..	..	..	..
5	Hæm. strep. and *viridans* strep.	±	..	..	..	..	..	..
6		+	..	..	..	..	..	..
7		+	+	..	..	..	..	+ +
8		tr.	+	..	..	..	..	..
9	Hæm. strep.	+	..	..	..	+	..	..
10	*viridans* strep.	tr.	..	..	..	+	..	..
11	Hæm. strep.	+	..	..	..	..	..	+
12	Hæm. strep. and *viridans* strep.	+	..	..	..	..	..	+ +
13	Hæm. strep.	±	..	..	..	..	..	..
14		+	..	..	..	..	..	..
15	?	+	..	±	+	..	..	..
16	Hæm. strep.	+	..	..	..	±	+	± ±
17		..	..	..	..	±	+	± ±
18		+	..	..	..	..	..	..

* Rheumatic.

Abbreviations.—H.S.= hæmolytic streptococcus (Carter). S.F.= scarlet fever streptococcus. V.= *viridans* streptococcus from malignant endocarditis. D.= acid nucleoprotein extract. E.= alkaline nucleoprotein extract. A.= albumin extract. G.= globulin extract.

+ = positive. ± = slight positive. tr. = trace.

A certain amount of cross-precipitation was observed, for positive reactions occurred with antigens other than those obtained from bacteria isolated from the throat at the time of the tonsillitis. With one exception, whenever precipitins to HS.D. or E. were found present in the patient's serum, the preceding tonsillitis had always been a hæmolytic streptococcal infection. Positive precipitin reactions with V.D. or E. antigens were not necessarily associated with a previous *Streptococcus viridans* infection of the throat. Occasionally precipitin reactions were produced by the S.F. antigen as well as the H.S. antigen.

CONTROL EXPERIMENTS

Two sets of experiments were undertaken. In the first of these the sera of different groups of people were tested against the nucleoprotein of organisms other than streptococci. For this purpose *B. coli* and *Staphylococcus aureus* were chosen, and antigens were prepared from these with the standard technique. Presumably because of the universal distribution of these organisms, positive precipitin reactions were obtained in most of the subjects tested (Tables III. and IV.). These cannot therefore be regarded as suitable controls. Nevertheless they have been included since they form a striking comparison with the negative results obtained with streptococcal antigen in normal non-rheumatic subjects.

TABLE III.—*Precipitins to* B. coli

Subject.	Numbers tested.	*B. coli* D (acid extract).		*B. coli* E (alkaline extract).
		Pos.	Neg.	
Laboratory staff ..	6	6	0	Negative.
Rheumatic patients ..	3	2	1	„
Scarlet fever patients	7	2	5	„

TABLE IV.—*Precipitins to* S. aureus

Subject.	Numbers tested.	*S. aureus* D (acid extract).		*S. aureus* E (alkaline extract).
		Pos.	Neg.	
Laboratory staff ..	6	4	2	Negative.
Rheumatic patients ..	2	2	0	„
Scarlet fever patients	6	5	1	„

The second series of control experiments was concerned with streptococcal precipitin reactions in different groups of individuals. It attempted to assess the relative importance of rheumatism and tonsillitis in this connexion. There were four groups as follows: (1) patients with quiescent rheumatism unassociated with acute tonsillar infection; (2) non-rheumatic subjects; (3) non-rheumatic individuals following a recent tonsillitis; (4) scarlet fever patients. The results of the experiments on these four groups have been summarised below.

1. *Control patients with quiescent rheumatism.*—A total of 13 patients were tested for precipitin reactions with streptococcal nucleoprotein, and the results were:—

Negative to H.S., S.F., and V., both to D. and E. antigens	8 cases.
Slightly positive to HS.D	4 „
Positive to HS.D	1 case.

From this it would appear that in the absence of tonsillitis streptococcal precipitin formation is neither very common nor well marked.

2. *Non-rheumatic patients (surgical cases).*—In this group 16 cases were tested:—

Negative to H.S., S.F., and V., both to D. and E. antigens	12 cases.
Slightly positive to HS.D	2 „
Slightly positive to V.D.	2 „

Non-rheumatic persons thus showed only a few slight positive reactions.

3. *Non-rheumatic patients following tonsillitis.*—When, however, another similar group of non-rheumatic patients

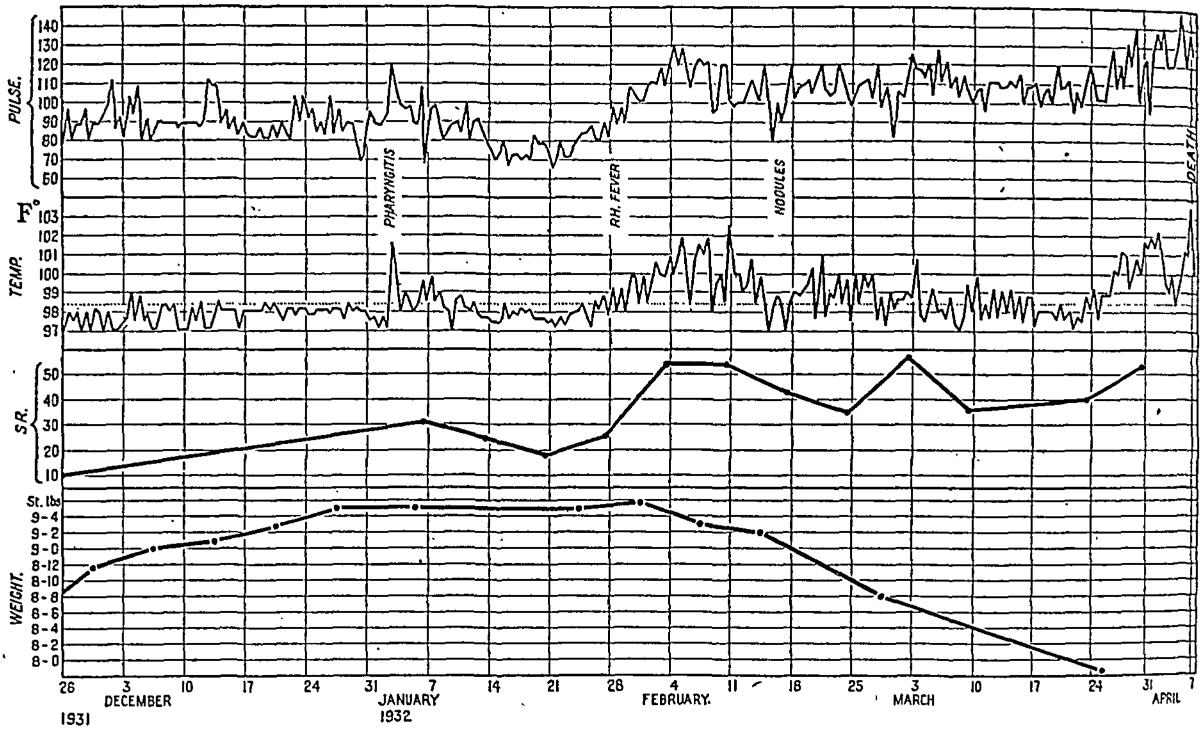


FIG. 1.—This chart illustrates various stages of a rheumatic relapse. The patient, a girl of 14 years, with old mitral endocarditis, was in a quiescent stage, afebrile, with a normal pulse-rate and steadily gaining weight. Her tonsils had been removed; nevertheless, following an acute pharyngitis and a "silent period" of three weeks, active [illegible] fever, pericarditis, and later, the appearance of subcutaneous nodules. Note the sudden increase o[illegible] (S.R.) and the synchronous rapid loss of weight until death supervened.—From "Recent Progress in [illegible]" edited by Sir John Collie, chapter on Rheumatism by Schlesinger. London. 1933.

were tested shortly after an attack of acute tonsillitis, half of them gave positive reactions at the appropriate time—though the numbers are too small for comparison. The 6 cases gave the following results:—

Positive to HS.D., SF.D., and SF.E. between 10th and 18th day (neg. 24th day) ..	1 case
Positive to SF.D. between 10th and 18th day (neg. 24th day)	2 cases.
Negative throughout	3 ,,

4. *Scarlet fever patients.*—We are indebted to Dr. Wilfrid Sheldon for the results of a series of precipitin tests performed on the sera of his scarlet fever patients shortly after the onset of the disease. In the 30 cases the results were:—

Positive to SF.D. (3 of them also positive to SF.E.)	14 cases.
Positive to HS.D. (2 also positive to HS.E.)	5 ,,
Slightly positive to HS.D.	2 ,,
Positive to HS.E. only	3 ,,
Slightly positive to V.E.	2 ,,
Negative to SF.D.	16 ,,
Negative to SF.E.	27 ,,

Thus precipitins were demonstrated in the blood of about half of these patients. Reactions with the scarlet fever streptococcal antigen were obtained frequently in this group alone, a fact that is perhaps not surprising, and lends support to the view that these reactions are largely specific.

Finally a comparison was made between the sera of rheumatic and non-rheumatic patients with and without a preceding tonsillitis in regard to precipitin formation against the globulin and albumin fractions of hæmolytic streptococci. Positive results were most often observed in rheumatic patients following tonsillitis. This is not surprising, since it is in these cases that a reaction with the unsplit nucleoprotein antigen is most frequently obtained. The results of these experiments are given in Table V.

TABLE V

Precipitin Reactions to the Globulin and Albumin Fractions of Streptococcus hæmolyticus. (36 cases tested.)

—	Cases.	Pos. G. and A.	Pos. G.	Pos. A.	Neg. G. and A.
Rheumatism—					
With acute tonsillitis ..	12	6	4	0	2
Without acute tonsillitis	11	0	1	0	10
Non-rheumatic cases—					
With acute tonsillitis ..	3	0	1	1	1
Without acute tonsillitis	10	2	2	1	5

Abbreviations.—G.= antigen obtained from globulin fraction. A.= antigen obtained from albumin fraction.

Discussion

It has already been emphasised that precipitins to hæmolytic streptococci can be demonstrated in a number of non-rheumatic conditions. The investigations here recorded indicate that precipitin formation in acute rheumatism depends more upon the preceding tonsillitis than upon the rheumatic process itself. The sera of patients with quiescent rheumatism unassociated with a recent throat infection were almost consistently negative. On the other hand, tonsillitis in a proportion of non-rheumatic subjects was also found to provoke precipitin formation at a time and to a degree strictly comparable to that observed in rheumatic patients. Notwithstanding this, we were impressed with the more constant reactions which occurred among the latter, and it would be no exaggeration to say that rheumatic patients appear to react more strongly to acute streptococcal infections than do other people. Our researches prove no more than this. At the same time they give some indication that the various immunological responses, such as the formation of precipitin, antihæmolysin, antifibrinolysin, &c., in acute rheumatism are all probably the direct outcome of an acute streptococcal nasopharyngeal infection. It is well recognised that such an infection may be present without symptoms and thus go undetected. That it may be followed two to four weeks later by acute rheumatic manifestations is also well known (Schlesinger, 1930). In the latter event, the antistreptococcal reactions discovered in the patient's serum might be interpreted as proof that the acute rheumatism is a direct result of infection with hæmolytic streptococci. This assumption may be correct, but is not justifiable from this evidence alone.

To our minds one of the most important and interesting features of rheumatic disease is the "silent period." A clear explanation of the interval of ten to thirty days which intervenes between a rheumatic relapse and the preceding streptococcal tonsillitis would add considerably to our knowledge of the ætiology. The fact that changes in the patient's blood, such as precipitin formation, are also at their height at the end of that period and just when the relapse is to be expected must have a distinct significance. The association has been explained on an allergic basis, but the reasoning is not clear or satisfactory.

On the evidence of these serological reactions it might be assumed that the patient's immunity to streptococcal infection is at its height at the end of the "silent period." Careful inquiry, however, reveals that it is just at this time that localised inflammatory lesions are likely to occur throughout the body. This is obviously the case with regard to acute rheumatism (Fig. 1). The complications of streptococcal tonsillitis in general also point to the fact that the patient appears to be particularly vulnerable at the time when the early serological changes are at their height, that is, during the second and third weeks.

"SILENT PERIOD" IN DISEASES OTHER THAN RHEUMATISM

The four examples that will be given are otitis, meningitis, adenitis, and nephritis. Some of these disorders are frankly pyogenic in nature, but whether they can be explained as a direct extension of the original infection or need some other interpretation, the same "silent period" is found in them all. It is shortest in *otitis* following tonsillitis, being then more often a week or ten days (Fig. 2). Otitis may also follow tonsillectomy, and in this case the intervening period is usually longer.

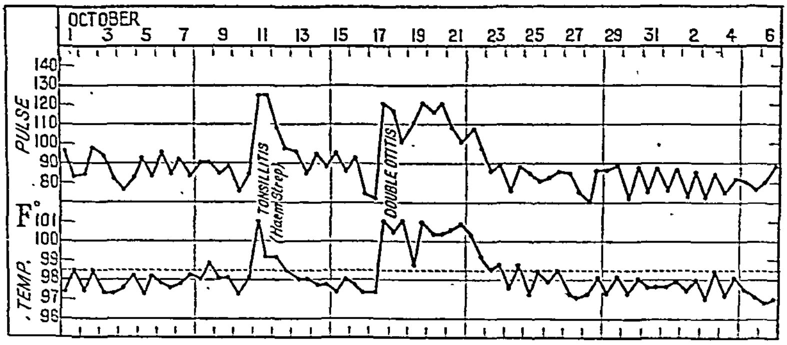
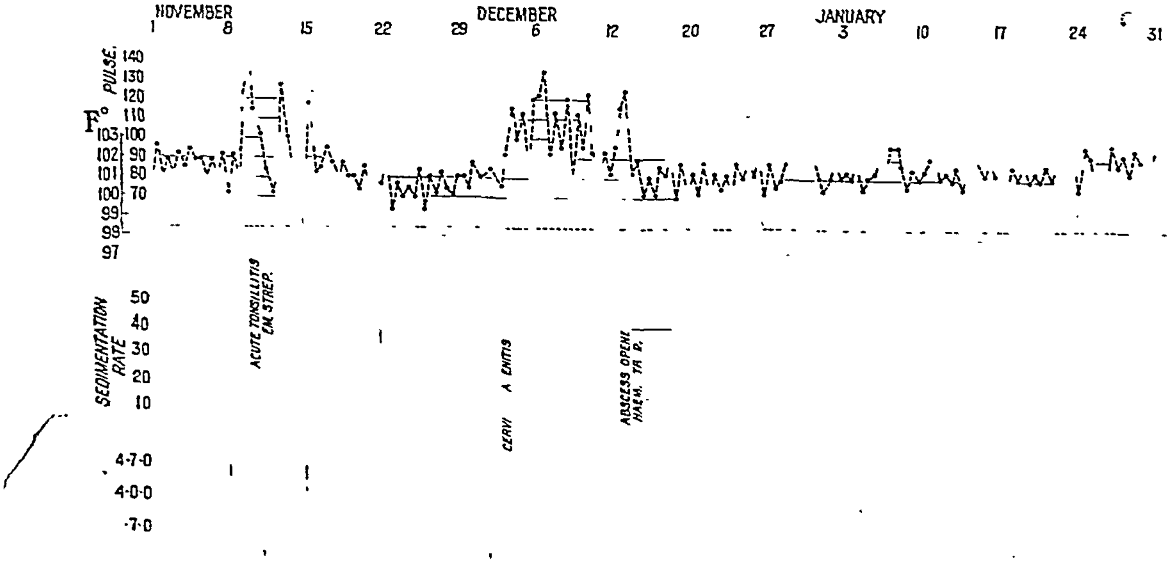


FIG. 2.—The chart in a case of streptococcal tonsillitis complicated by otitis media, demonstrating a similar although shorter silent period to that seen in Fig. 1.

The silent period in streptococcal *meningitis* is not generally realised, but deeper inquiry into the history of such cases will almost always elicit the same story. So constant is this that it becomes almost pathognomonic of the disease. The illness begins with an acute nasopharyngeal infection, followed in about a week by an extension to the middle ear. Here the inflammation may gradually subside spontaneously or require relief by paracentesis. After this the temperature falls to normal, and the patient appears to be well on the road to recovery. The picture then changes abruptly, when three weeks from the



-. 3.—Cervical adenitis following a hæmolytic streptococcal tonsillitis with a well-marked inte onset of the otitis there is a sudden renewed pyrexia with signs of cerebral irritation. This soon gives way to evidence of frank meningitis, and the condition generally terminates fatally.

These are two examples of delayed pyogenic complications in close connexion with a primary focus of infection.

Cervical *adenitis* may either become purulent or stop short of this and heal without interference. In either event the same remarkable intervening period occurs (Fig. 3).

Nephritis following simple streptococcal tonsillitis or scarlet fever resembles acute rheumatism in being seldom pyogenic. Again there is the delay of two or three weeks before it arises. Suspecting that there might be changes in the kidneys short of actual nephritis following acute streptococcal throat infections, we have investigated 20 rheumatic patients with this point in view. In a large proportion of those examined it was found that a varying degree of albuminuria appeared in the urine, sometimes associated with red and white blood-cells, from the tenth to the twenty-first day after the onset of tonsillitis. The urine was examined daily for over a month both by heating and by the salicyl sulphonic acid test. Ten rheumatic patients without tonsillitis were also investigated as controls. In a number of these, albumin was found to be present at various times, but not persistently over a given period, and only for a day or two at a time. Among the controls the albuminuria was never associated with red or white cells in the urine. Catheter specimens were taken in a few cases from both series and the urine cultured. These were found to be sterile, and throughout the investigation streptococci were not discovered on microscopic examination of the deposits obtained by centrifuging the urine. These slight renal inflammatory changes following throat infections are not confined to rheumatic patients. De Wesselow (1932) made a similar investigation of 134 patients who were recovering from an attack of tonsillitis and found albuminuria in a considerable proportion of them.

It appears therefore that the widespread results of an acute streptococcal throat infection can be recognised both in rheumatic patients and in those who show no evidence of a subsequent rheumatic process. Some of these results may become manifest after a latent period, and at the time when the immunity response to the original infection is at its height. The tissues at that time appear to be particularly vulnerable and it is possible that this allows some as yet undiscovered cause of rheumatism to enter the body; or perhaps this state of increased susceptibility permits an already present but latent causal agent to enter into a state of activity. It is conceivable that a virus may be the answer to the problem, and we are investigating the disease further from this point of view.

Summary and Conclusions

(1) Streptococcal precipitins can be demonstrated in the blood of rheumatic patients following acute streptococcal throat infections. The most usual time of their appearance is between the tenth and thirtieth days. (2) The nucleoprotein and globulin fractions of the bacterial substance provide the best antigens for demonstrating the reaction. (3) Although the reaction seems to be most frequent and strongest in rheumatic subjects, it is not confined to them. Tonsillitis in non-rheumatic patients may give rise to the same sequence of events. (4) Rheumatic relapses are commonest from ten to thirty days after a streptococcal tonsillitis—i.e., at a time when changes in the patient's blood, such as precipitin formation—are at their height. (5) The presence of a similar "silent period" in various complications of streptococcal tonsillitis is reported and its general significance is discussed. (6) The relationship of hæmolytic streptococcal infection to acute rheumatism is reviewed, and mention is made of the possibility that the disease is caused by some additional specific factor such as a virus.

Appendix

PREPARATION OF NUCLEOPROTEIN EXTRACTS (HEIDELBERGER AND KENDALL, 1931)

Cultures of organisms obtained in a medium of glucose phosphate broth at a pH of 7·8 were centrifuged. The deposit was washed in saline and suspended in 200 c.cm. of acetone. It was then shaken mechanically for two hours, centrifuged, resuspended in the same quantity of acetone and allowed to stand overnight.

After being centrifuged again the organisms were suspended in 200 c.cm. of ether which had previously been freed from alcohol, peroxides, and aldehydes by washing with water, drying with calcium chloride, and storing in the dark over calcium chloride and sodium hydroxide pellets. The suspension was then stirred frequently for several hours, again centrifuged, and this process repeated with a fresh quantity of purified ether. A final amount was added and the mixture was allowed to stand overnight, after which it was centrifuged and the organisms were dried in vacuo over phosphorus pentoxide. The defatted cells were ground in a ball mill at room temperature until no intact cells could be observed in a smear stained by Gram's method.

The ground material was then rotated in the ball mill with a little 0·2 normal acetate buffer solution at pH 4 for 10 minutes and rinsed into about 200 c.cm. of the same buffer solution and shaken mechanically for 5–6 hours. All these operations were performed in the cold. The mixture was then centrifuged. The supernatant was saved and was tested for specific polysaccharide.

The residue in the centrifuge tube was ground in a mortar with a little chilled M/15 phosphate buffer solution at pH 6·5, and added to about 200 c.cm. of the same solution and shaken mechanically for 5–6 hours. The mixture was centrifuged until clear, and the supernatant was removed and acidified with glacial acetic acid until the resulting precipitate began to flock (Fraction D). The residue in the centrifuge tube was ground and extracted with about 200 c.cm. of water, adding enough normal ammonium hydroxide from time to time to maintain pH at 8·4—i.e., just pink to phenolphthalein. The mixture was again centrifuged and cleared as much as possible, and the supernatant acidified with 50 per cent. acetic acid until the precipitate began to flock (Fraction E). Supernatants of Fractions D. and E. were tested for carbohydrates. Fraction D. was homogenised in about 50 c.cm. of water and redissolved with the aid of chilled normal sodium bicarbonate solution which had been neutralised to pH 6·8 by cooling and cautiously adding glacial acetic acid. Care was taken to leave Fraction D. acid to litmus.

Fraction E. was similarly treated, using ammonium hydroxide instead. The pH of Fraction E. should never overstep pH 8·5. After reprecipitation, Fraction D. was dissolved in neutralised normal sodium bicarbonate, centrifuging off any insoluble residue, if necessary. To this solution sufficient 5 per cent. phenol was added to make 0·5 per cent. final concentration. Fraction E. was redissolved in a minimal amount of N/10 NaOH and centrifuged. To the residue more N/10 NaOH was added and the mixture centrifuged, the supernatants being saved and carbolised as in Fraction D. The total nitrogen was estimated in both solutions D. and E. by a micro Kjeldahl method and diluted for use to a concentration of 20 mg. of nitrogen in 100 c.cm.

Both these fractions consist of nucleoprotein. Fraction E. is relatively stable, but Fraction D. is very easily broken down into simpler substances, and even slight increases in the pH of the solutions are capable of bringing this change about. It was found almost impossible to maintain the exact pH of the neutralised sodium bicarbonate solution owing to loss of CO_2 with slight rises of temperature or even rough handling. This is the cause of the varying potency of the D. fragment. In regard to the bacterial fragments it would seem that the less the protein complex is broken up, the greater is its antigenic power. This is also shown by the larger moleculed globulin fraction having a greater antigenic power than the smaller moleculed albumin fraction.

PREPARATION OF ALBUMIN AND GLOBULIN FRACTIONS (GOUGH, 1933)

Twenty litres of a 24-hour culture of hæmolytic streptococci, grown in glucose phosphate broth, was centrifuged and the deposit desiccated over concentrated sulphuric acid in vacuo for two days. The dried organisms were then transferred to a ball mill and ground until no intact organisms could be seen in a stained smear.

The contents of the ball mill were then extracted with 500 c.cm. of distilled water by shaking for 2–3 hours and then centrifuged and the supernatant fluid removed. The deposit was again shaken with 200 c.cm. of water and recentrifuged, and the supernatant fluid removed and added to the first fluid. This was repeated until only a little insoluble material was left. The supernatant fluids were then saturated with ammonium sulphate. After a short time a curd appeared, consisting of the precipitated proteins. The whole was filtered and the curd saved. This greyish curd was washed into about 100 c.cm. of distilled water, shaken vigorously, and refiltered. This process was again repeated, and the filtrate was then half saturated with ammonium sulphate. A white flocky precipitate formed; the whole was centrifuged and the precipitate, the globulin fraction, was dissolved in a minimal amount of water. The supernatant fluid was completely saturated with ammonium sulphate, and the precipitate, the albumin fraction, was redissolved in a minimal amount of water. Both the globulin and albumin fractions were dialysed in collodion sacs until no more ammonium sulphate was present.

We are indebted to Dr. D. N. Nabarro, director of the pathological department at the Hospital for Sick Children, for his help and encouragement in these researches. Our thanks are also due to Dr. C. R. G. Barrington and the nursing staff at West Wickham for their valuable assistance, and to Mr. G. W. Cecil for his technical aid.

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BIRMINGHAM GENERAL HOSPITAL.—A further financial improvement is to be noted in the report of this hospital. The contributory association has increased, and not only has ordinary expenditure been met out of ordinary income, but a large proportion of extraordinary expenditure has also been provided from the same source. Substantial legacies have made it possible further to increase the reserves. The income was £86,482, as against £82,026 in the previous year, and the number of in-patients was 8369 (an increase of 63 on last year). The total number of new out-patients was 59,400, as against 56,459 in 1933.

CLINICAL TRIALS WITH A NEW ANTITYPHOID SERUM

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In September, 1934, a new antityphoid serum was obtained from Dr. Felix, of the Lister Institute, London, for experimental purposes. The serum was unconcentrated and contained antibodies to both the "O" and the "Vi" antigens to a titre of 1 in 40,000 and 1 in 400, respectively. It was decided to give this serum to every other case admitted, alternate cases receiving equivalent amounts of normal horse serum. This plan was adhered to for the first 8 cases, but when the beneficial effects of antityphoid serum were observed, it became difficult to withhold it from subsequent severe cases. Consequently the experimental group, to date, comprises 8 cases, whereas the control group numbers only 4. Of the 8 patients receiving antityphoid serum all except one recovered, the exception being a case who perforated some days after receiving 10 c.cm., a dose we now know to have been far too small. One of the 4 controls also died, another developed a carditis which prolonged convalescence, and two children who had mild illness pursued a normal course towards recovery, though one continued to have liquid motions for six weeks from onset.

Before summarising the main points of interest in the individual cases comprising this small series, it should be mentioned that every case of proved infection with *B. typhosus* admitted to hospital since last September was either given antityphoid serum or used as a control. The intramuscular route was used except in Case 9, when some of the serum was given intrathecally. None of the 12 patients had received T.A.B. vaccine or had suffered from a previous enteric infection. The controls were actually alternate cases and were not selected. The cases here referred to were treated independently of the Palestine experiment,[1] Dr. Felix deliberately withholding his findings so that the serum might be investigated without any preconceived ideas as to its effects.

In the following notes the expression "clinically definite" means that the patient had many or all of the classical symptoms and signs of enteric infection—viz., insidious onset; steadily rising temperature in the first week, remaining remittent later, and subsiding by lysis; disproportionately slow pulse; headache (giving way later to delirium); epistaxis; bronchitis; tumid and perhaps tender abdomen; some abnormality of the digestive system, usually diarrhœa; enlargement of the spleen; rose spots; and the appearance of the diazo reaction in the urine between the 8th and 12th day of the fever. Toxæmia was graded according to severity by a system of pluses. Toxæmia graded "+" corresponds to that met with towards the end of the first week of the disease in an average case, the grading "++" indicates a degree similar to that experienced during the "stage of advance" in the average case, whereas "+++" connotes a degree equivalent to that found quite early in the very severe cases, or more commonly, in the "typhoid state" into which the average case may drift towards the end of the third week.

It is unfortunate that there is no precise method of assessing, and of graphing, toxæmia, for the effect of the serum in reducing it was much more striking than is apparent from a study of the temperature charts, some of which are reproduced below.

CASE RECORDS

CASE 1.—John A., aged 17½ years, admitted on 8th day of disease. Clinically a definite enteric infection; Widal positive on 9th day. One of three members of the same family treated. Was first case in series to receive antityphoid serum, a single dose of 10 c.cm. being given on 17th day. Toxæmia graded "++" before serum administered. Noted as "brighter, toxæmia less" on succeeding days, but perforation suddenly occurred on 20th day. Laparotomy immediately performed revealed a large rent in the distal end of his small intestine which was sutured. Several other impending perforations in adjacent bowel noted. Patient died seven hours after operation.

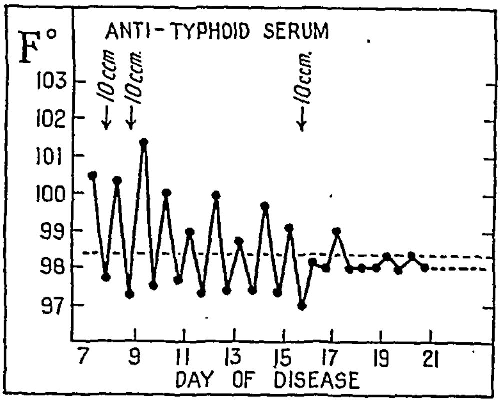

FIG. 1 (Case 3).

Comment.—Dosage of serum far too low. This was due to Dr. Felix's absence in Palestine, his advice as to dosage not being received until some weeks later, by which time we had ourselves increased it. If such a case had come under treatment in November, three doses, each of 50 c.cm., would have been given, and in the event of perforation supervening 80–100 c.cm. would have been injected into the peritoneum before closure of the laparotomy wound. This was the only fatality among the cases receiving antityphoid serum.

CASE 2.—A control. Michael A., aged 5 years, brother of John A. (Case 1), admitted in 12th day of disease. Clinically definite but, as is usual with children, a mild case. Widal positive for *B. typhosus* 14th day. Given one injection of normal horse serum (10 c.cm.) on 22nd day, on which day motions were normal. Toxæmia was noted as absent before horse serum given. Pulse-rate kept over 100 until 32nd day of disease.

CASE 3.—Mrs. A., aged 45, mother of the two previous patients, admitted on 7th day of disease. Clinically an enteric infection. *B. typhosus* grown from the blood. Toxæmia on admission graded "++." After two doses of serum (each 10 c.cm.) given on 8th and 9th day, pyrexia at a lower level, and toxæmia "+" (Fig. 1). Final dose of 10 c.cm. of antityphoid serum on 16th day seemed to abort the disease, toxæmia being noted as absent within next 24 hours. Motions normal on 23rd day.

Comment.—This woman was quite as ill on admission as her son who died after perforation.

CASE 4.—A control. Bridget B., aged 25, admitted on 8th day of disease. Clinically definite. Widal, at first negative, was positive on 13th day for *B. typhosus.* Given 10 c.cm. of normal horse serum on 14th day. Temperature seemed to settle 48 hours later (16th day of disease) but convalescence was slow, and a carditis supervened which persisted for six weeks, the sedimentation-rate of the red cells being still slightly above normal at this late date. Motions were normal 13 days after the injection of horse serum (27th day of disease).

Comment.—This was a mild case of enteric and toxæmia was noted as absent before the patient received horse serum.

CASE 5.—Mrs. C., aged 29, admitted on 8th day of her disease. Clinically a definite enteric, the rose spots being particularly profuse. Widal positive for *B. typhosus,* a blood culture being negative earlier. Given two injections (each 10 c.cm.) of antityphoid serum on 11th and 13th day, after which the disease seemed to abort (Fig. 2), although the motions were not normal until 31st day. On admission toxæmia graded as "+," but within 48 hours after second dose of serum the note was "toxæmia absent."

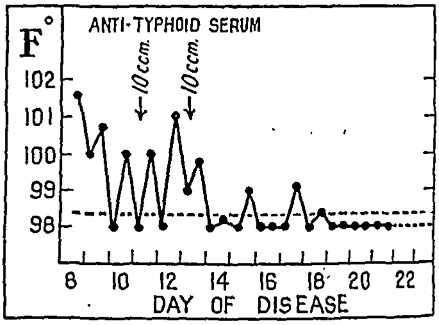

FIG. 2 (Case 5).

CASE 6.—A control. Elizabeth D., aged 23, admitted on 25th day of disease. Clinically an enteric infection. Widal positive for *B. typhosus* in very high titre. Given two doses (each 10 c.cm.) normal horse serum on 26th

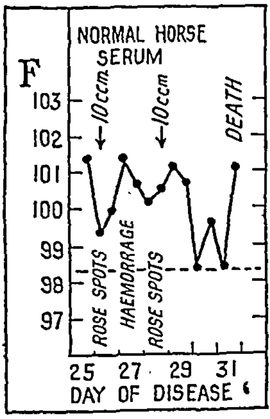

FIG. 3 (Case 6).—Control.

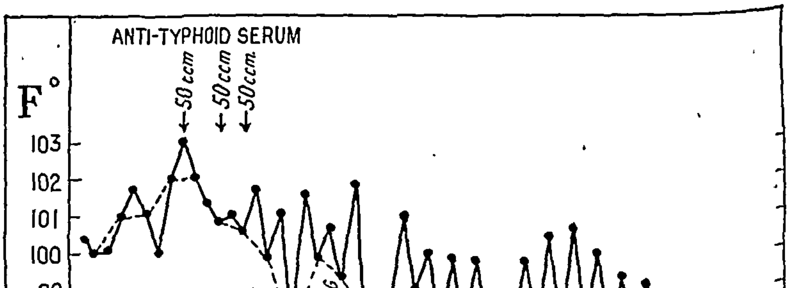

FIG. 4 (Case 7).—S. rash = serum rash. An interrupted line shows the course of the morning temperatures up to the time when they became consistently subnormal.

and 28th day. Hæmorrhage from the bowel occurred on 27th day. This was checked but patient gradually drifted into the typhoid state and died on 31st day (Fig. 3). Toxæmia on admission "++" became "+++" 48 hours after first dose of normal horse serum.

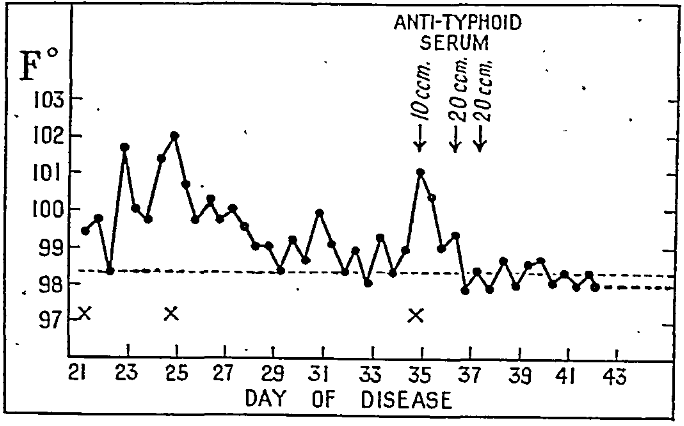

FIG. 5 (Case 9).—× = lumbar puncture.

CASE 7.—Josephine D., aged 21 years, sister of Case 6. Admitted on 5th day of disease. Clinically definite. *B. typhosus* grown from blood during first week. Temperature steadily ingravescent from 100–103° F. for first five days after admission (Fig. 4), pulse-rate varying from 80–90. Toxæmia "+" on admission, "++" on 9th day of illness, when patient received first dose of antityphoid serum (50 c.cm.). Temperature curve immediately became defervescent, the morning temperature being progressively lower on next four days, reaching 98° on 14th day of disease. Same dose (50 c.cm.) serum repeated on 11th and 12th day of illness. With the exception of two pyrexial "mounds" occurring between the 14th and 20th day of disease, the morning temperature remained normal thereafter, the pulse-rate meanwhile fluctuating between 72 and 80. The two mounds in the morning temperature curve (indicated by interrupted line on chart) were definitely related to serum rashes, which—after 150 c.cm. of unconcentrated serum—were to be expected. Motions normal on 23rd day. Toxæmia graded as "+" on day serum treatment started, as "++" on days when second and third doses administered, and as "absent" two days after the last dose given (14th day of disease). The pyrexia occurring during serum rashes was unassociated with anything other than local discomfort. Rose spots continued to appear until the day before the morning temperature finally settled (19th day).

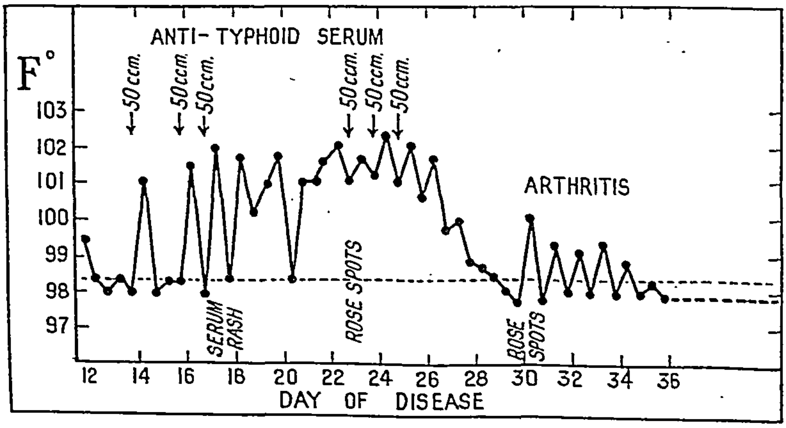

FIG. 6 (Case 10).

Comment.—In this case antityphoid serum seemed to cancel the toxæmia, and to bring the disease to a premature conclusion when the "stage of advance" should normally have occurred.

CASE 8.—A control. Annie D., aged 9 (sister of Cases 6 and 7), admitted on 14th day of disease. Clinically a mild enteric, confirmed by positive blood culture for *B. typhosus* and, later, a Widal. Given three doses (each 50 c.cm.) of normal horse serum. Toxæmia graded as "+" before serum administered, and "absent" on the day on which the last dose was given (25th day). Motions not normal until 41st day of disease.

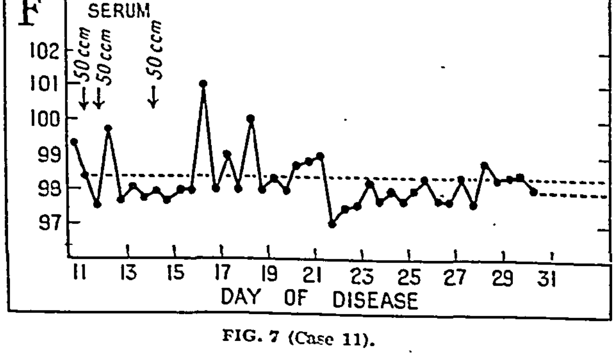

FIG. 7 (Case 11).

Comment.—In this mild case the morning tenperature was normal only once in the third week of the disease, whereas in the case of her sister Josephine (whose ingravescent period had presaged a severe attack) the morning temperature was normal during the same period 4 days out of 7. The toxæmia in the case of the younger child was graded as "+" during this period, whereas with Josephine it was noted as absent. The horse serum in the case of Annie did not seem to accelerate or retard the normal progress of her mild infection towards recovery.

CASE 9.—Mary E., aged 4 years, admitted on 21st day of disease. Child extremely emaciated and presented clinical signs of meningitis which was originally thought to be tuberculous, this suspicion being strengthened when a clear fluid under pressure was obtained by spinal puncture. No tubercle bacilli were isolated from the cerebro-spinal fluid. There were no intestinal symptoms at any time. Spinal puncture repeated 4 days later with similar result —viz., clear fluid under pressure, no tubercle bacilli isolated. Patient now in critical condition, extremely wasted, very irritable, semi-comatose with occasional screaming fits which rendered segregation in a cubicle necessary. A week after the second spinal puncture, the hospital pathologist (Dr. J. H. Pollock) succeeded in isolating an actively motile bacillus from the cerebro-spinal fluid. This "organism was strongly agglutinated by typhoid agglutinating serum, less strongly by Para B serum, and not at all by Para A." The organism gave the typical black colonies on Blair and Wilson's selective medium. A similar motile organism was isolated from an otorrhœa which had developed subsequent to admission. Accordingly, on 35th day of disease, when the temperature was 101° F. and the child apparently moribund, a third spinal puncture was performed and, after clear fluid had been withdrawn, 10 c.cm. of antityphoid serum was administered intrathecally, a dose of 20 c.cm. of the same serum was given intramuscularly on the two succeeding days (Fig. 5). The result was more dramatic than would appear from a study of the temperature charts, although the speedy diminution in pyrexia was itself remarkable. The child became rational, quiet, and proceeded to put on weight rapidly. A week later the case note was "rational now—not irritable." The signs of meningitis cleared, and the patient left hospital mentally and physically normal. Blood submitted for a Widal reaction on the day before serum therapy begun returned weakly positive for *B. typhosus* "*O.*"

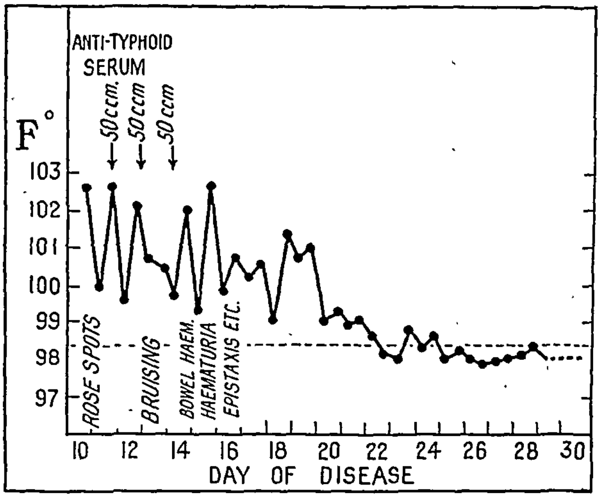

FIG. 8 (Case 12).—Hæm. = hæmorrhage.

Comment.—This case appears to be an instance of primary typhoid meningitis, and a very remarkable amelioration of symptoms and signs, and of pyrexia, with a speedy and complete recovery followed the administration of antityphoid serum.

Case 10.—Nurse F., aged 26, admitted from another hospital on 12th day of disease. Clinically a definite enteric. Blood culture negative for *B. typhosus* on 12th and 21st day but Widal strongly positive for that organism on 14th day. *B. typhosus* later isolated from urine. Received three doses (each 50 c.cm.) of antityphoid serum on 14th, 16th, and 17th day of disease. Temperature did not settle thereafter, a generalised urticarial serum rash appearing on 18th day (Fig. 6). The return of liquid motions, increase in size of spleen, the appearance of rose spots, return of the diazo reaction in the urine, and a rising temperature after the serum rash had faded suggested the onset of a relapse. Serum was repeated on 23rd, 24th, and 25th day of disease, 50 c.cm. being given on each occasion. Two days after the first dose of the second series of injections the temperature will be noted to have taken a downward trend and, apart from a mild attack of arthritis causing local discomfort, convalescence was speedy and complete. This patient never complained after her first serum treatment except about her serum rash and arthritis. The latter was undoubtedly a serum phenomenon, as the patient had in all 300 c.cm. of natural serum, double the maximum dose given to any other case. Motions were normal on 33rd day. Rose spots continued to appear until 30th day.

Toxæmia in this case graded as "++" on admission and "absent" immediately after first series of injections had been completed.

Case 11.—Frank G., aged 54, a bedridden paralytic, admitted on 11th day of disease, much wasted and with extensive bedsores. Clinically a definite enteric, blood culture positive for *B. typhosus*, also Widal and later fæces. On admission toxæmia "++." Given antityphoid serum (3 doses, each 50 c.cm.) on 11th, 12th, and 15th day of disease (Fig. 7). Subsequent toxæmia difficult to assess because of concurrent paralytic and mental condition. Appeared much better from 18th day, temperature remaining settled after 22nd day though motions not normal until 37th day.

Comment.—The clinical impression is that had this man not been given antityphoid serum, he would not, in his lowered state of vitality, have survived his attack of enteric.

Case 12.—Kathleen H., aged 17. Admitted on 10th day of her disease. Clinically a definite enteric. Blood culture and Widal positive for *B. typhosus*. Toxæmia "++" on admission, quickly becoming "+++" on development of hæmorrhages from mucous membranes of nose, mouth, intestine, and bladder. Large areas of subcutaneous hæmorrhage with petechiæ, hæmorrhage into rose spots, and discrete subconjunctival hæmorrhages also occurred. In addition, extravasation took place into the skin of the abdomen, which had been blistered by poulticing before admission. Patient's condition was now very critical and the typhoid state seemed imminent. Antityphoid serum was given in 3 doses of 50 c.cm. on 11th, 12th, and 13th days respectively (Fig. 8). Within 4 days of the last dose her condition showed a remarkable improvement. Toxæmia was definitely less (++), the patient was again rational, hearing less blunted, and all restlessness gone. The urine which had contained a large quantity of blood for several days was clear on 19th day of disease, on which day the toxæmia was noted as absent. Stools were free of blood on 18th day. The temperature was normal on 22nd day, and remained so thereafter. Motions were formed on 26th day.

Comment.—The beneficial effects following serum therapy in this case were the most striking observed in the series of cases under review. Hæmorrhagic typhoid is a very rare disease (E. W. Goodall[2] says he saw only one in his extensive experience, while the late C. B. Ker[3] refers to it as "fortunately most uncommon" and "very fatal").

CONCLUSION

It is, of course, not claimed that any sweeping assertions can be made for the efficacy of this new antityphoid serum on so small a series of observations. This is more especially the case as the controls were, on the whole, not good. It is however possible to say that out of 8 cases receiving antityphoid serum, 7 ceased to cause anxiety within a few days of the last dose, and the only failure was the case receiving a very inadequate single dose who died from a local complication—viz., perforation.

I have to acknowledge the great kindness of Prof. J. W. Bigger who elected to carry out the bacteriological work in connexion with this investigation. I must also express my indebtedness to Dr. F. N. Elcock (senior resident medical officer at Cork-street Hospital) for his careful day-to-day notes on the series of cases here reviewed.

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Hospital Treatment for Unemployed.—Lord Derby, as president of the Merseyside Hospitals Committee, has given his support to a new scheme for the provision of voluntary hospital care for unemployed families. This scheme is known as the Friends of the Sick Poor, and a condition of membership is an undertaking to adopt an unemployed family for voluntary hospital care at an annual cost of 10*s.* per family. It is hoped that this scheme will attract support from people who do not come within the penny-in-the-pound fund for Merseyside hospitals.

THE POSTERIOR LOBE OF THE PITUITARY GLAND

ITS RELATIONSHIP TO THE STOMACH AND TO THE BLOOD PICTURE

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IT has previously been shown (Dodds, Noble, and Smith [1]; Dodds and Noble [2]) that it is possible to prepare an extract of the posterior lobe of the pituitary gland which when injected subcutaneously into animals will produce an acute hæmorrhagic lesion of the acid-bearing area of the stomach; and the animals usually recover completely in a period of some ten days. The same effects can be produced in rabbits by the oral administration of the extract. These lesions have been described in previous papers in detail. It has been shown that if the contents of the stomach be rendered alkaline prior to injection, it is impossible to obtain the characteristic reaction. The most significant points concerning the gastric lesion are, firstly, its extremely accurate limitation to the area of the stomach in which oxyntic cells are found, and, secondly, the complete absence of lesions in other parts of the alimentary canal. It has also been demonstrated that similar lesions can be produced in all the laboratory animals tested—namely, monkey, cat, rabbit, guinea-pig, rat, and mouse.

The present communication deals with the extension of these investigations, and it will be seen that the extract exerts a profound influence upon the blood picture.

PRODUCTION OF CHRONIC ULCERS

In view of the acute lesions produced by a single injection, it was decided to study the effects of repeated doses of the extract. A typical experiment was as follows: a rabbit was given 40 c.cm. of standard B.P. pituitrin by stomach-tube every 7 days over a period of 8 weeks. During this time the animals appeared to be in good condition and did not exhibit any unusual symptoms after the initial injection. At autopsy a typical punched-out ulcer was found on the greater curvature which had perforated but was healed by omentum. Chronic ulcers have been produced following a single subcutaneous dose of 75 mg. per kg. of the acetone picric acid extract of the posterior lobe of the pituitary. An ulcer has also been found following four subcutaneous injections of 5 c.cm. of standard B.P. pituitary extract, given every other day. These ulcers are always single and situated in the acid-bearing area of the stomach. Their gross appearance is typically that seen in chronic gastric ulcers in man. We believe that this is the first occasion on which chronic gastric ulcers have been produced with any regularity in animals by the injection of an extract of a normal tissue.

EFFECT ON GASTRIC SECRETION

An attempt was made to study the mechanism for the production of the lesion. Since it has been shown that the rendering of the stomach contents alkaline is capable of abolishing the typical lesion, it follows that gastric acidity must in some way be associated with this phenomenon. A technique for studying the reaction of rabbits' stomachs to histamine was worked out. The following is a very brief account of a typical experiment. The rabbits were put on a milk and bran diet for two weeks to allow the stomach contents to become sufficiently liquid to be washed out. Under sodium amytal anæsthesia the pylorus was ligatured, the most dependent portion of the stomach opened, and an external fistula was established. Through this the contents were removed and the stomach was washed out. In the control series of animals the resting juice was collected for half an hour. This was followed by the subcutaneous injection of 0·25 mg. per kg. of histamine. Thirty-minute specimens were collected, and were titrated for free hydrochloric acid and for total acidity. In the experimental group the above technique was followed except that these animals received 2 c.cm. per kg. of standard B.P. pituitrin intravenously, and then after 30 minutes the histamine injection. The control series showed a typical profuse secretion due to the histamine with the free HCl reaching a peak of 80–130 c.cm. of N/10 HCl per 100 c.cm. of juice in 90–120 minutes. In the experimental group we have never found any free HCl secreted, even though large doses of histamine have been repeated at the end of 5 hours. This reaction has also been obtained using the acetone picric acid extract administered intravenously. From these and other experiments it would appear that injection of the extract is capable of causing a temporary inhibition of secretion of hydrochloric acid, in such a way that the stomach will not react to the histamine stimulus for a period of some 6 hours. It is interesting to note at this juncture that other previous workers have called attention to the fact that injection of pituitary extract reduced gastric acidity.[3] [4]

EFFECTS ON BLOOD

It has been shown [5] that very profound changes occur in the blood of animals injected with this extract. Thus, if a rabbit be injected subcutaneously with the preparation, it will be found on the fifth day that a severe anæmia has developed, the blood count being reduced from 6,000,000 down to as low as just over 1,000,000 red cells. The hæmoglobin is also reduced but not proportionately to the same extent. On the fifth or sixth day a reticulocytosis appears which may rise to as high as 50 per cent. There is a marked anisocytosis and a definite macrocytosis. If the animals be killed obvious changes are seen in the spleen, such as hæmorrhagic infarction, and there is evidence of a stimulation of the blood-destroying system. The intestines are full of bile, and it would appear that the anæmia may possibly be ascribed to an increased blood destruction. If left alone the animals will recover completely.

DISCUSSION

It is impossible at the present time to offer any complete explanation of the various phenomena recorded, but the following remarks may assist in an attempt to estimate the significance of these investigations. In the first instance it must be

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* Working with a grant from the Medical Research Council.
† Working with the Ellen Mickle Fellowship from the University of Toronto.

pointed out that the substance, or substances, responsible for this reaction are contained only in the posterior lobe of the pituitary gland. Exhaustive controls have been made with other tissues of the body, employing not only doses identical to those which prove active in the case of the pituitary, but with doses many times larger. We have, however, been unable to obtain with these any action upon the stomach or blood picture. The following is a list of tissues from which extracts have been prepared: spleen, liver, kidney, testes, muscle, pancreas, suprarenal, brain, stomach, thyroid, and placenta.

As pointed out in previous publications, the factor or factors necessary for the production of a gastric lesion and blood picture are contained in the commercial pituitary extract (B.P.) as well as in the pituitary extract made by the acetone-picric acid process by the method of Dodds and Dickens.[6] It seems at first sight that the quantity of material injected is so great as to make it doubtful whether the phenomena described are really exaggerations of a natural process. It must be borne in mind, however, that the B.P. pituitary extract is standardised for the oxytocic and vasopressive principles in units which bear no relation to the phenomena described. By application of the method of preparation and purification of the vasopressive principle described by Kamm et al.[7] it has been found that the actual weight of an effective dose of the active principle may be reduced to a figure quite compatible with those of other hormones. On the weight basis, therefore, it appears that no theoretical objection could be made to our observations on these grounds.

A full explanation of the connexion between the pituitary gland and the stomach and the blood picture can only be arrived at by a study of the hypophysectomised animal, and this is in active progress at the present time in association with Dr. A. S. Parkes and Mr. I. W. Rowlands.

From the clinical aspect, our observations might possibly provide an explanation for a number of hitherto puzzling phenomena. For example, in Simmonds's disease it is known that there is atrophy of the organs of the reticulo-endothelial system.[8, 9] Again, in certain cases of basophil adenoma of the anterior lobe of the pituitary gland, ulceration of the stomach[10] and also erythræmia have been recorded.[11] In cases of duodenal ulcer polycythæmia has also been observed.[12] The occurrence of acute gastric lesions following operations on the base of the brain has been recorded on several occasions in the publications of Harvey Cushing.[13] From these investigations it seems justifiable to consider the possibility of a hormonal connexion between the posterior lobe of the pituitary gland, the stomach, and the blood picture.

One of us (E. C. D.) is indebted to the Medical Research Council for a grant towards the defrayment of the cost of material for this investigation.

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CLINICAL AND LABORATORY NOTES

PARALYTIC ILEUS CURED WITH PROSTIGMIN

By W. E. DAVID, M.C., M.B. Sydney

A REPORT to the Therapeutic Trials Committee of the Medical Research Council published a year ago[1] described the use of prostigmin in a series of cases of abdominal distension following operation. The dose ranged from 1·0 to 4·0 c.cm., but the larger quantity was used on one occasion only and the usual practice was to give 1·0 c.cm., repeated if necessary. None of the patients mentioned in that report seem to have been as gravely ill as the one who is the subject of the present note. The case is interesting not only because almost every known remedy (except acetylcholine) was previously given, but because the dose of prostigmin administered was the large one recommended by Dr. M. B. Walker for the treatment of myasthenia gravis.

A. B., aged 23, was seen on March 30th, 1935, with acute appendicitis. Temp. 101°F; pulse-rate 88. He had had abdominal pain for 48 hours before sending for medical assistance. The operation revealed a gangrenous appendix, which was removed and a drainage-tube inserted. On the following day the tube was changed and the patient was given a turpentine enema, with a very small fæcal result. On April 2nd, at noon, 2 drachms of Cascara Evacuans were given. This was vomited and the dose repeated at 2 P.M. He vomited at 7.30 P.M. and was complaining of abdominal pain and distension. No result from aperient was obtained, so he was given two vegetable laxative tablets at 8 P.M.

He vomited off and on the whole night; the abdomen remained distended and there was no result (either flatus or fæces) from the aperient. Hourly foments were applied to the abdomen and on April 3rd a turpentine enema produced a good fæcal result and he was put on to 1 c.cm. pituitrin, to be followed by 0·5 c.cm. three-hourly. Towards noon his distension had increased and he was unable to pass flatus alone or with the help of a flatus tube. Hiccup began and his distension increased. Nothing abnormal could be felt per rectum. Towards midnight he was given another turpentine enema, which gave a good, formed result, but the abdomen still remained tensely distended and the skin was stretched and shining, and the patient looked drawn, haggard, and altogether extremely ill, although his pulse and temperature did not appear to reflect the severity of his abdominal condition. He was at 12.40 A.M. on April 4th put on to eserine, gr. 1/100 every four hours.

He vomited green bile-stained fluid and hiccupped off and on the whole day. The abdomen at 4.30 P.M. was even more distended and no gurgling could be heard with the stethoscope. A turpentine enema gave a fluid return with streaks of blood-stained mucus, but no flatus was passed. An ox-gall enema was given at 6.20 P.M. with no result, followed at 9.30 P.M. by 20 c.cm. of anti-gas gangrene serum. An hour later the patient was given a spinal anæsthetic (Stovaine) with no result. At midnight he was given an enema of milk and molasses with no result. He was still vomiting and had a very bad night; his temperature on April 5th was 100°, the pulse-rate varying between 90 and 112. He had been having salines subcutaneously and saline and glucose per rectum for the preceding 48 hours, and this was continued throughout the day, and hot fomentations and radiant heat were applied to the abdomen.

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[1] Carmichael, E. A., Fraser, F. R., McKelvey, D., and Wilkie, D. P. D.: THE LANCET, 1934, i., 942.

At 7.35 P.M. he was given 5 c.cm. of prostigmin subcutaneously. Five minutes after the injection gurgling could be heard in the abdomen and in ten minutes he passed a large action followed by a large quantity of flatus, and his bowels continued to act for 40 minutes. His condition was much improved on the following day, but the abdomen was still somewhat distended despite frequent motions. The effect of 1 c.cm. of prostigmin was tried, but this did not seem to affect the condition in that dosage. The stomach was washed out with saline and half a pint of saline left in. This was repeated twice during the day, and by the evening his vomiting, which had been aggravated by a shortage of chlorides, ceased.

Dr. Walker in the treatment of myasthenia gravis recommends that atropine, gr. 1/100, should be given with the 5 c.cm. of prostigmin, to counteract any slowing of the heart's action and the intestinal peristalsis which ensues. This, of course, was not given in this case, but the pulse was carefully watched and did not vary much as a result of the injection. The point to be stressed is the dosage of prostigmin, and there appears to be little doubt, if one can judge from one apparently hopeless case, that it should be given a trial before other methods as soon as the diagnosis of paralytic ileus has been made.

The cause of paralytic ileus is obscure, but apart from toxæmia there is probably a nervous factor. Anxiety at the thought of an operation may cause over-action of the sympathetic, which is known to have an inhibitory effect on intestinal peristalsis, while a local lesion of the peritoneum or perhaps the gut may cause reflex inhibition of peristalsis. Prostigmin may be presumed to act by antagonising inhibition of both kinds.

CLOSURE OF LARGE POSTAURICULAR FISTULAS AND DEPRESSIONS

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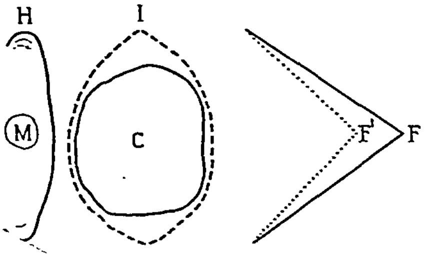
SMALL postauricular openings are easily closed. Occasionally, however, one is confronted with cases in which much substance has been lost and an unsightly cavity is left behind the ear with a fistula leading to the additus. The following case illustrates my method of filling such cavities. Mrs. A, aged 30, whilst on holiday in August, 1933, contracted influenza and double acute mastoiditis. An extensive Schwartze operation was performed on each mastoid, and when she was seen by me some as later there was a large depression behind each neasuring 1¼ in. vertically and 1⅛ in. horizontally n some necrosis at lower edge of each cavity ig. 1, C). In one ear there was a fistula leading own to the additus.



1.—The cavity (C) and the incisions and F). H = helix. M = meatus.

An incision (I) was made round the edge of the cavity and the diseased bone was removed. The posterior bony wall of the meatus (M) was lowered and the margins of the bony cavity were well bevelled. A V-shaped incision (F) was then made well behind the cavity, and the entire thickness of the flap was separated from the cranium and displaced forwards. This made it possible to stitch the edges of the incision (I) without any tension, the result being shown in Fig. 2. One side healed by first intention; the other, in which there was a fistula, continued to suppurate through the meatus for a few weeks. The incisions made to form the flap are within the hair margin, heal by first intention, and are invisible. This operation can be combined with a temporal muscle graft.

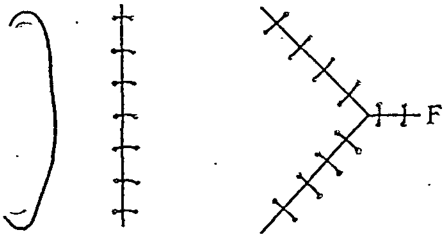


FIG. 2.—The incisions after closure.

POSTURAL HYPOTENSION WITH TACHYCARDIA

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A CASE of postural hypotension has recently been described by Croll and Duthie[1] who give some particulars of previously recorded cases, numbering 18 in all. The chief feature of their case was a fall in the systolic and diastolic pressures, accompanied by giddiness, when the patient changed from the supine to the sitting and from the sitting to the standing position. The fall was associated with a great decrease in the output of water by the kidneys. It was not prevented by abdominal compression, by the application of tourniquets round the limbs, or by the administration of adrenaline, pituitrin, and histamine. The pulse-rate is stated to have showed "a normal response to change in posture—namely, an increase in pulse-rate in the erect position and a decrease in the recumbent." The variation in rate is not given but it was presumably similar to that noticed in normal subjects by Tait McKenzie (whom they quote)—namely, a difference of about seven beats per minute between the lying and the standing positions. Among the other cases referred to by Croll and Duthie is one described by Sanders[2] in which tachycardia and abnormal changes in the electrocardiogram accompanied the fall in blood pressure brought about by change of posture. Indefinite changes in the nervous system were present in three cases described by Bradbury and Eggleston.[3] In Croll and Duthie's patient both knee-jerks were absent and there was a pseudo Argyll Robertson reflex in the left pupil.

Our own patient was a Hind aged 28, a lorry driver, who was admitted ospital, Lahore, on May 26th, 1933, compla ks of palpitation and giddiness associated deal of mental discomfort and difficulty in b loss of appetite, heaviness in the epigas meals, and pain in the lower part of the ch

He had been married for five years and had aged 3½ years and 8 months, both health vegetarian. According to his statement he had been taking opium (amount unknown) for three years but had given it up two months before admission to hospital. There was no history of previous illness other than probable malaria.

History of present illness.—The patient stated that attacks of palpitation and giddiness began about a year before admission and were often accompanied by a sensation of nausea. The attacks ceased when he lay down, but he also found that relief was obtained from walking about. He never fainted and was able to carry on his work. The palpitation and giddiness got no worse during the year, but he became considerably weaker and the pain in the chest rather increased. There was no cough and no loss of sexual power. The temperature occasionally rose to 99° F.

Physical examination.—The patient was 5 ft. 6½ in. in height and of spare build. Nothing abnormal was detected in the heart and lungs by ordinary and X ray examination. The electrocardiogram was normal. The abdomen was somewhat tender and resistant in both iliac fossæ. Skiagraphy showed a spastic colon with stasis. The nervous, genito-urinary, and hæmopoietic systems appeared normal. The teeth and throat were healthy.

The attacks of giddiness, which were related to changes from the horizontal to the erect posture, were associated with a marked increase in the pulse-rate and a less marked fall in the systolic blood pressure. The diastolic pressure was low even in the supine position and altered little with change of posture. Further, the fall in systolic pressure when the patient sat up from the recumbent position was increased very little or not at all on standing, provided he remained sitting for a couple of minutes or so. The pulse-rate, however, was always much more frequent in the standing than in the sitting position. Typical figures were :—

	Recumbent.	Sitting.	Standing.
Blood pressure	110/55	86/55	86/50
Pulse-rate per minute	*70*	*92*	*125*

As in Croll and Duthie's case the blood pressure in the supine position varied from time to time. The readings sometimes went up to 130/70 or thereabouts, the pulse pressure being always relatively high. There was no evidence of aortic incompetence. An injection of 1 c.cm. of adrenaline did not alter the circulatory reaction to changes of posture. The effects of pituitrin, histamine, tourniquets, and abdominal compression were not tried.

A prominent feature of the case was the pronounced tachycardia which seemed to be compensatory for the fall in systolic pressure. This compensation took a little while to adjust itself. When a direct change was made from the supine to the standing position the pulse-rate did not reach a maximum for about two minutes. The increase in heart-rate was brought about through the normal reflex mechanisms. The electrocardiogram showed that a sinus rhythm was maintained in the erect as well as in the horizontal position. With rapid rates the P and R waves coalesced but there was no other change. The low diastolic pressure in the absence of any leak from the arterial system indicated defective vascular tone. The carotid sinus reflex could be easily elicited, a prompt fall in pulse-rate being produced by pressure on either sinus. It is generally stated that compensation for the hydrostatic effects of gravity on the circulation is brought about through the buffer action of the carotid sinus and the aortic nerves. MacWilliam,[4] however, is of opinion that this mechanism acts only in the horizontal position and that compensation in the erect posture is effected through reflexes from some part of the vascular circuit in the lower limbs. Our patient's statement that his "attacks" were relieved by walking about is of interest in this connexion. MacWilliam found that in Croll and Duthie's patient movements of the lower limbs in the erect posture prevented a fall of pressure or even brought about a rise.

The underlying cause of the defect could not be determined. The observed facts indicate that the fault lay chiefly in the effector mechanism of the postural vasomotor reflex. There was no reason to suspect serious derangement of the receptors, nor was there any evidence of disease of the central nervous system. The patient's abdominal symptoms and signs, together with occasional fever, led to a suspicion of abdominal tuberculosis which is fairly common in adult Punjabis. Such a condition might interfere with the action of the splanchnic vasoconstrictor mechanism.

SUMMARY

A case of postural hypotension associated with sinus tachycardia is described in a man aged 28. The cardiovascular system was otherwise normal. It is considered that the tachycardia was compensatory for defective vasomotor control in the erect posture.

REFERENCES

1. Croll, W. F., and Duthie, R. J.: THE LANCET, Jan. 26th, 1935, p. 194.
2. Sanders, A. O.: Amer. Heart Jour., 1932, vii., 808 (quoted by Croll and Duthie).
3. Bradbury, S., and Eggleston, C.: Ibid., 1925, i., 1 (quoted by Croll and Duthie).
4. MacWilliam, J. A.: THE LANCET, Jan. 26th, 1935, p. 198.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS AND PHARMACOLOGY

A MEETING of this section was held on April 30th with Dr. GEORGE GRAHAM in the chair.

Dr. C. A. NEYMANN (Chicago) read a paper on the

Treatment of Disease by Electropyrexia

He traced the history of treatment by fever and observed that some of the earliest pyrexial-producing agents were only in degree more radical than some of the most modern. Fever alone was the important common factor in all methods. The death-rate with malaria treatment of general paralysis ranged between 10 and 20 per cent. and improvement was but slight. Diathermy compared very favourably, showing a 2·5 per cent. death-rate, 34 per cent. improved, and 29 per cent. complete remission. The personal factor accounted for variations in results from different centres; if demented patients were treated with few pyrexial attacks and low temperatures the results would naturally be less good. In private practice Dr. Neymann had had a recovery-rate of 8 per cent. after at least 20 treatments with a pyrexia of 103°–106° F. maintained for 11–14 hours. The death-rate had been negligible—only 1 death in all. The serological changes did not correspond with the clinical benefit, though improvement was noted in some respects. The cerebro-spinal Wassermann reaction was very slow to change, even in patients who had returned to work. Only 2 of 18 patients followed up had failed to continue at work. Diathermy therefore offered a hope of recovery to every early case, but the grandiose type had a better chance than the depressed and slowly dementing. A comparison of three groups of 50 patients treated with sodoku, malaria, and diathermy showed the great superiority of the last method. A single intense bout of fever could not cure when the organisms had adapted themselves to their habitat over years and were heat-resistant from the start.

Tabes was also favourably influenced, and progress could be judged by the arrest of crises and lancinating pains; the benefit was so great and immediate as to be almost unbelievable. Cerebro-spinal fluid and blood changes accompanied the clinical improvement. Several workers had treated the rarer cerebrospinal syphilis; resistant cases were suitable for pyrexial treatment and often responded excellently. The benefit was partly due to destruction of the treponema and partly to the vasodilatation. Syphilitic optic atrophy, treated with intensive pyrexia, up to 107·6° F. for part of the time, had shown some promise: 4 of 7 patients treated had retained the vision they had.

Two male patients with primary chancres had been treated: 1 had recovered and the other had developed secondary symptoms. The urethral temperature was 1° higher than the rectal, and presumably therefore at least 106° was required. One patient so treated had lost his primary lesion, but had developed modified secondaries wherever his skin had been uncovered (and presumably therefore cooled) during treatment. Therefore the more recent patients had been intensively treated in special cabinets, and thermocouples in cisterna magna, rectum, axilla, and under the skin were used to control the temperature throughout the body. External and internal temperatures were kept well above 105° F. Nevertheless, secondaries had appeared, although the chancres healed promptly and were free from organisms. After one treatment the treponema could be seen breaking up and taking on a coccal appearance. Hyperpyrexia therefore could not eradicate the virus, though it influenced and partially arrested the progress of the disease. Work was in progress to find out whether arsenical treatment as an adjuvant was best given during or after the pyrexia.

Four patients with a parkinsonian syndrome had also shown benefit, one of them being enabled to work a typewriter. Multiple sclerosis had been treated in 25 cases. There had been lasting improvement in all mild cases and some improvement in average advanced ones. Four very advanced cases showed no improvement: 1 had died as a result of treatment and 1 soon after it. Sydenham's chorea could be treated by electro-magnetic induction and the results had been astoundingly good. The fever should not be above 104°–105° F. for children. The treatment had also proved beneficial in asthma—22 out of 44 cases showing lasting remission, and others some improvement—and in chronic arthritis. The hypertrophic type of arthritis did not react well to hyperpyrexia, but the chronic infectious type was decidedly improved. Electropyrexia was the treatment of choice in gonorrhœal arthritis. It had been used in many other conditions, but its uncritical application was apt to bring it into disrepute.

Discussion

The CHAIRMAN said that electrical methods of producing fever would remove the undesirable necessity for giving a patient one disease in order to combat another. Although both methods might cause anxiety, yet with electrical treatment the physician knew when the critical times were due. A general paralytic might be exceedingly ill and uncomfortable at noon and perfectly well two hours after the fever was over. He hoped for good results in all cases of asthma

Dr. F. J. NATTRASS, describing the results of short-wave high-frequency currents in the treatment of 15 cases of general paralysis, said that ten or twelve treatments had been considered to be adequate. Dr. Neymann, however, had convinced physicians that this was not a sufficient number. Two of the patients had died as a result of the treatment, and two others afterwards; all had been relatively old and not very suitable cases. From what the lecturer had said, they appeared to have been treated too frequently, treatment having been given on alternate days. Working in a general hospital, he and his colleagues had used amytal and once or twice avertin anæsthesia to mitigate the distress caused by the treatment; morphine had been useless, and hyoscine had caused alarming symptoms, sweat ceasing and pyrexia being difficult to control. In 3 cases of tabes, complete relief from lightning pains had been given by the treatment, and a few cases of gonococcal arthritis had been strikingly benefited.

Dr. NEYMANN, in reply, said that excited and maniacal patients had to be strapped down. Patients with asthma, tabes, and Parkinson's syndrome had to be given relief from the effects of the pyrexia. Hyoscine was very dangerous, but morphine might be used in large doses, starting with gr. ¼, repeated in fifteen minutes if no relief were given. Some cases reacted very well to paraldehyde, but it made the patient smell offensively. Ten drachms might be tolerated without any harm, particularly as the temperature rose and the respiration-rate increased. He deprecated the indiscriminate use of artificial pyrexia in France for practically all diseases. It should, he thought, be kept for diseases to which the body reacted with a small amount of fever: more or less subacute or chronic conditions. It was probably useless in endocrine disorders and malignant disease.

Dr. W. W. PAYNE said that the type of change observed in electrical hyperthermia was complete disappearance of all the phosphate from the urine, and the fall of the inorganic phosphate content of the blood to under 2 mg. per 100 c.cm. as the temperature rose. As it fell, the phosphate rose accordingly. The creatine content followed a slightly different plan, rising and falling with the temperature. The work had all been done with children, who normally excreted creatine in the urine. This creatine would disappear at certain periods between the exposures and would return during pyrexia. The phenomenon was probably due to the breakdown of phosphocreatine in the muscles under the influence of adrenaline. It was difficult to know whether this was a response to the infection or to the fever.

Dr. AGNES SAVILL inquired whether there was any difference in the results of artificial and of natural pyrexia.

Dr. NEYMANN answered that the blood creatine decreased after a series of fever treatments, but increased at the time of each treatment. It increased, like the non-protein nitrogen and the urea nitrogen, as a concentration phenomenon, and finally rested at a lower level. Pyrexia was believed to influence the rapidity of excretion of all waste products. It had been suggested that the treatment might be of some use in chronic interstitial nephritis with nitrogen retention. The lactic acid content of the blood, which was formed from the katabolism of the muscles and of the body, increased under pyrexia. Consequently the hydrochloric acid content of the stomach had at first sight a tendency to increase, but later it decreased on account of the great excretion of salt due to sweating. It would be easy to find out the respective effects of toxæmia and pyrexia if the curves recorded in a bout of toxic fever were reproduced afterwards electrically and physiological observations were made. In conclusion, he said that the particular method used to produce pyrexia was unimportant; it was the man who counted and not the machine. The electro-magnetic induction method heated the inside of the body but not the fat, for it heated tissues in direct proportion to the electrolyte content of the colloids; it therefore did not cause burning.

ROYAL ACADEMY OF MEDICINE IN IRELAND

A JOINT meeting of the sections of medicine and pathology was held on April 5th, with Dr. V. M. SYNGE, president of the section of medicine, in the chair.

Antityphoid Serum

Mr. A. FELIX, D.Sc. (Lister Institute, London), read a paper on experimental and clinical results with a new antityphoid serum. He described experiments from which it was concluded that the efficacy of a therapeutic antityphoid serum would depend on the presence in it of both the Vi and O antibodies. Serum of this type had been prepared from horses at the serum department of the Lister Institute and had given encouraging results in the treatment of cases of typhoid fever in Palestine. These results were described in THE LANCET of April 6th (p. 799).

Dr. C. J. MCSWEENEY reported his experiences with the serum in Dublin. They are set out in detail on p. 1095.

Dr. W. R. O'FARRELL (president of the section of pathology) expressed a hope that Dr. Felix's experiments would throw light on the question of antityphoid vaccination. Referring to the leucopenia constantly present in enteric he suggested that the leucocyte count might be helpful in assessing the immediate effects of the serum.

Prof. J. W. BIGGER said that the Vi antigen described by Dr. Felix was an entirely new conception, and offered great therapeutic possibilities, one of the chief of which was its utilisation in establishing active immunity. The treatment of infections by antibacterial sera had hitherto been very disappointing. The only antibacterial serum which he personally thought was really good was antimeningococcal serum. Here one was dealing with an antiendotoxin. It should however be remembered that the new antityphoid serum was still in the experimental stage, and he thought it should be entrusted only to those prepared to use it in a scientific way, and in a hospital where proper bacteriological facilities existed.

Prof. W. D. O'KELLY asked how a vaccine could be prepared which would contain the Vi antigen, and if the febrile reaction to the vaccine might be neutralised by giving at the same time some serum.

Dr. T. T. O'FARRELL said it was disappointing that Dr. Felix's experiments on mice had not all come out clinically as one would have expected. In the old days many cases of typhoid cured themselves, presumably because the patients produced their own antibodies. In Dr. Felix's experiments there was an enormous number of cases which showed Vi antigen in the serum, and yet in many cases the antibody did not arrive until quite late in the course of the disease. From this one would not think the Vi antibody to be of much use in affecting the progress of a case. Referring to the use of the antiserum, he was rather surprised to hear that in the case of perforation this serum had done good. The danger of perforation was due to the *Bacillus coli* which invaded the peritoneum, and therefore he could not see how antityphoid serum could be useful in these cases.

Prof. LEONARD ABRAHAMSON drew attention to the fact that clinicians had at first used serum only in alternate cases, but after a time had felt obliged to use it in every case.

Dr. G. C. DOCKERAY said that whilst it appeared that in most cases of typhoid Vi antibodies were produced in low titre, in one case described by Dr. Felix the Vi titre was higher on the 77th day than the Vi titre of the therapeutic sera. This suggested the possibility of being able to use convalescent serum derived from patients who did develop high titres.

Dr. A. R. PARSONS pointed out that this was not the first attempt to treat typhoid with serum. In Paris in 1909 cases had been treated with Chantemesse's serum. At first this was reported to give very good results, but very little had been heard of it since. Again, Grasset's serum had been described as very useful, but little was heard of that either. Though the results presented by Dr. Felix and Dr. McSweeney were very good, not enough cases had yet been treated to reach any conclusion statistically.

Dr. R. H. MICKS suggested that Dr. McSweeney should get in touch with county medical officers of health and medical superintendents of country hospitals and ask them to send him their early cases.

Dr. J. FLOOD said that the clinical evidence so far available consisted in the cases Dr. Felix had treated in Palestine and those Dr. McSweeney had treated in Dublin. In his opinion these did not constitute a sufficient number on which to base any definite conclusions. Looking at the temperature charts, the critical period in all of them appeared to be that period at which the patient got the serum. He thought it possible that if Dr. McSweeney had had a series of cases treated with the ordinary antityphoid serum the critical period would have fallen at the same time—namely, the day on which the patient got the serum.

Dr. V. M. SYNGE (president of the section of medicine) agreed with Prof. Bigger that one should not be unduly enthusiastic about this new treatment; the results were very encouraging but the number of cases very small. There was a great deal of typhoid in Ireland, and Dr. McSweeney should have plenty of material to work on.

Dr. FELIX, in replying, said he had been cautious in not drawing any statistical conclusions; to do so would be quite wrong. He was quite aware of the older sera which had been prepared, tested, and abandoned, and was sure that Chantemesse's serum must have been good. It was the only one in whose preparation live organisms had been used. All the sera which were now being produced were produced in a way which destroyed the antibody. It was impossible to compare the in-vitro titres in relation to their protective action. Caution and scepticism were perfectly sound in relation to his serum, which was still in the experimental stage. His purpose in Palestine was to establish whether there was anything to parallel the clear-cut results obtained in animals. He personally would not expect serum to clear up a local complication like a perforation.

Dr. MCSWEENEY said he would be very glad to extend in any way he could the observations in the use of the serum.

of procedure vary. The variations concern the method of making the incision and the conjunctival flap; the method of opening the capsule; the use of preliminary iridectomy; the irrigation of the anterior chamber to get rid of soft lens substance; and the employment of conjunctival sutures. The removal of the lens in its capsule by the "Indian Smith operation" is also briefly described—with its modifications by Knapp, favoured in America, and by A. H. Sinclair of Edinburgh—and also the suction operation of Barraquer. None of them, however, is generally performed by English or American surgeons, whose choice lies rather between the "combined" operation and the "simple" one without iridectomy.

This book gives the generally accepted facts about cataract in an easily readable form. It is well illustrated, well indexed, and well printed.

The Biochemistry of Medicine

Second edition. By A. T. CAMERON, M.A., D.Sc., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba; Biochemist, Winnipeg General Hospital; and C. R. GILMOUR, M.D., C.M., F.R.C.P. (C.), Professor of Medicine and Clinical Medicine, University of Manitoba; Physician, Winnipeg General Hospital. London: J. and A. Churchill Ltd. 1935. Pp. 518. 21*s*.

Prof. Cameron is well known as a writer of accurate and well-informed works on biochemistry. His association with a clinician, Dr. C. R. Gilmour, has resulted in the addition of a very useful book to the literature of biochemistry as applied to medicine. Much information is here crammed deftly into small space. Our only suggestion concerns the inclusion of detailed descriptions of pieces of work of doubtful value, and in some cases of work which has definitely been disproved, in which obviously the authors themselves have no faith. A good example of this can be seen in the section on the biochemistry of tumours, where several paragraphs are devoted to an entirely discredited serum reaction. This space could have been employed much better by giving a succinct account of, let us say, Warburg's work on the metabolism of malignant and normal tissues, or by a biochemical consideration of the more recent work of Peyton Rous, R. E. Shope, and other investigators. The summary of recent advances in the endocrine glands is a very good one; we would have liked to have seen further details concerning the inter-relationship of the sterol group, the vitamins, and the sex hormones.

The work as a whole is excellent.

A Text-book of Pathology

An Introduction to Medicine. Second edition. By WILLIAM BOYD, M.D., M.R.C.P. Edin., F.R.C.P. Lond., Dipl. Psych., F.R.S.C., Professor of Pathology in the University of Manitoba; Pathologist to the Winnipeg General Hospital. London: Henry Kimpton. 1934. Pp. 1047. 45*s*.

Prof. Boyd's books are notable for their clear exposition and easy style, and through them he has made himself widely known as a teacher of pathology. This second edition of his Text-book of Pathology shows considerable alterations, especially in the arrangement of the section on general pathology. Degenerations are dealt with first, then circulatory disturbances, leading up to inflammation and repair, immunity, bacterial infections, and animal parasites. The chapter on bacterial infections has been rearranged. The section on general pathology concludes with a valuable innovation—a chapter on heredity in disease in which Prof. Boyd discusses in a very brief but illuminating way the theory of inheritance.

The work is still very readable. It covers the subject thoroughly, and the material presented is well chosen and set out rather dogmatically, so that it gives the student clear and unconfused impressions of pathological processes without burdening him with controversial issues. The illustrations are plentiful and well chosen, and the whole work is handsomely produced.

Essays on Chronic and Familial Syphilis

By GRIFFITH EVANS, M.A., D.M., F.R.C.S., Hon. Surgeon, Caernarvonshire and Anglesey Infirmary. Bristol: John Wright and Sons Ltd. 1934. Pp. 91. 7*s*. 6*d*.

THIS small book consists of a series of essays upon an aspect of syphilis which has received little attention—except in France. The author bases his observations upon certain propositions which though not definitely proven are accepted by most syphilologists: (1) that the spirochæte of syphilis has a "dormant, granular" phase, in addition to the spiral form; (2) that untreated syphilis may be transmitted to the third generation; and (3) that even in the absence of a positive Wassermann reaction a diagnosis of syphilis can sometimes be made. He gives a list of the leading symptoms which he has noted in 100 consecutive cases of what he regards as chronic or familial syphilis—the two commonest being abdominal pain and chronic headache which were present together in 41 of the cases. Amongst the physical signs in these same 100 cases, "unequal reacting pupils" were noted in no less than 50, and in the author's experience the most suggestive common signs of latent syphilis are, in addition to inequality of the pupils, smooth, fissured, or fibrotic tongue, persistent tachycardia, and chronic low pyrexia. The presence of these symptoms should, in Mr. Evans's view, lead to the suspicion of syphilis. Acting on these assumptions the author has treated his patients on antisyphilitic lines, generally with marked benefit.

These essays, which were awarded the gold medal of the Hunterian Society, deal with syphilis in relation to nervous dyspepsia, the chronic abdomen, nervous dysphagia, glossitis, and cancer. They provide a thoughtful contribution to our knowledge of syphilis in its less recognised form.

British Journal of Surgery

THE April issue (Vol. XXII., No. 8) includes the following papers:—Progressive Post-operative Gangrene of the Skin, by A. M. Stewart-Wallace (London). The third case to be recorded in England. The gangrene followed drainage of an empyema, and was very extensive, causing death after 32 weeks. The 37 reported cases are reviewed, and treatment by complete excision is recommended.—Adenoma of the Duodenum, by B. R. Sworn and J. Menton (Stafford). The tumour was discovered and removed during an operation of partial gastrectomy for gastric ulcer. It did not apparently add to the symptoms of the case. It proved to be polypoid, and consisted of a hyperplasia of the duodenal glands in a loose stroma.—Measured Dosage in the

Radium Treatment of Carcinoma of the Urinary Bladder, by R. G. Hutchison (Manchester). Open exposure and the use of radon seeds are advocated. A circular distribution of the seed is described, and the calculations required to ensure as uniform as possible a dosage over the field have been reduced to convenient clinical tables.—Interinnomino-abdominal (Hind-quarter) Amputation, by G. Gordon-Taylor and Philip Wiles (London). An account of 5 cases, of which 3 were successful. Particular attention is drawn to the importance of blood transfusion and care in turning the patient during the operation.—The Pathology of Congenital Genu Recurvatum, by D. Stewart Middleton (Edinburgh). A case is described which was successfully treated at the age of 18 months by division of the quadriceps tendon and of its lateral expansions. The condition is considered to be an intrauterine degeneration of muscle-fibres in the quadriceps femoris.—Observations on Fistula-in-Ano in Relation to Perianal Intramuscular Glands, with reports on 3 cases, by Sir Charles Gordon-Watson and Harold Dodd (London). Histological evidence is submitted that infective processes in the perianal glands may be the starting-point of fistulæ and of ischiorectal abscesses.—Schimmelbusch's Disease of the Breast and Dr. A. Lacassagne's Experiments on Mice, by Sir Lenthal Cheatle (London). Lacassagne's observations on young male mice show that injections of œstrin are followed by a series of changes exhibiting a striking similarity in nature and sequence to those described by Cheatle as typical of Schimmelbusch's Disease. In the mouse the changes lead up to adeno-carcinoma.—Osteo-arthritis of the Hip-joint, by T. P. McMurray (Liverpool). The indications for the various forms of treatment are discussed. Manipulation in the early stages, and the Lorenz method of osteotomy are considered to be of most value.—The Pathogenesis of Paget's Disease of the Nipple and Associated Lesions, by Sir Robert Muir (Glasgow). Observations confirming that an intraduct carcinoma of the breast is the underlying cause of Paget's disease. The frequency of adeno-carcinoma is emphasised, as well as its association with ordinary breast carcinoma.—Paraplegia in Pott's Disease, with Special Reference to the Pathology and Ætiology, by R. Weeden Butler (Cambridge).—Pott's Paraplegia: Prognosis and Treatment, by H. J. Seddon (London). These two papers are complementary. In all 186 cases are reviewed: numerous pathological specimens have also been considered. The clinical course of paraplegia occurring at various stages, early and late, in the disease is correlated with the pathological lesions. The value of hyperextension in the prevention and cure of paraplegia, and of the operation of costotransversectomy, are especially stressed.—Skeletal Lipoid Granulomatosis, by John Fraser (Edinburgh). The disease is regarded as a reaction on the part of the reticulo-endothelial tissues to an excess of lipoid in the circulating fluids. Granulomatous tissue is produced in various situations, displacing, compressing, and causing atrophy. Exophthalmos, diabetes insipidus, and calvarial osseous defects are among the clinical results. Treatment is by deep radiotherapy, and cholesterol-free diet.—An Unusual Case of Bone Regeneration after Complete Diaphysectomy on Two Occasions, by J. W. S. Blacklock and W. Rankin. The case was one of acute osteomyelitis of the tibia. The regenerated bone had grown with the general growth of the child, and showed remarkably normal anatomical features.—The Treatment of Spasmodic Dysphagia by Sympathetic Denervation, by Lambert Rogers (London). Operations consisting of complete removal of both superior cervical sympathetic ganglia were carried out in November and December, 1934, and have given complete relief of symptoms.—On Osteo-arthritis in the Dorsal Intervertebral Joints. A study in Morbid Anatomy, by L. R. Shore (Cambridge). Includes an examination of the incidence at various vertebral levels and an interpretation of the findings in relation to mechanical stress.—Polyspondylitis Marginals Osteophytica, by L. R. Shore (Cambridge). The term is used to describe the common type o vertebral disease with "lipping" of the bodies The underlying cause is considered to be loss o normal turgescence of the discs, and strain, ending in ossification, of the deep intervertebral ligaments.—Sympathectomy in the Treatment of Achalasia o the Cardia, by G. C. Knight (Research Laboratorie of Royal College of Surgeons of England). Th ætiology of achalasia and cardiospasm are considered the various types of treatment are reviewed, and th rationale of sympathectomy is explained. An accoun of 3 cases thus treated is given.

Liverpool Medico-Chirurgical Journal

Hugh Owen Thomas's position among moder leaders of British surgery was well brought out i Mr. Frederick Watson's centenary volume dealin with his life and surgical principles and performances The current number of the Liverpool Medico-Chirurgical Journal keeps alive our interest i Thomas, being dedicated to a centenary notice o the man who directly, and indirectly through hi great pupil and nephew Robert Jones, dictated muc of the theory and technique of modern bone surgery Mr. T. P. McMurray, director of orthopædics in the University of Liverpool gives us in the Journal a detailed biography of Thomas made specially acceptable by the appropriate illustrations. His biograph concludes by repeating one of Thomas's own frequent sayings—"I hope I shall not be remembered onl as an inventor of splints, for any mechanical foo can do that; the idea to which they give effect i the important point." Such a narrow impressio of Thomas's work will be removed by the action of the Liverpool Medical Institution, where it is intended to form a Hugh Owen Thomas and Robert Jones library of orthopædic surgery in which it is hoped that every phase of that branch of surgery will be represented. This excellent number of the Journal concludes with an essay on malignant tumours by Mr. Harry Platt, orthopædic surgeon to the Mancheste Royal Infirmary, based upon an address delivered recently at the University of Liverpool, and noticed editorially in THE LANCET last week.

Italian Journal of Allergy

THE first number of *I Quaderni dell' Allergia*, an Italian bi-monthly publication devoted to the subject of allergy, contains a paper by J. Van Niekirk on the altered power of serum from allergic patients to combine with certain pigments. The autho finds the blood-serum from cases of asthma, urticaria, and Quincke's œdema often, but not always, to have a reduced power of combining with pigment as compared with normal sera. This change, however, is not characteristic of the allergic state nor was i possible to establish a parallel between the clinical condition of the patient and the serum reactions. The other papers in this number deal with diagnostic intradermal reactions and climatic allergy. The highly specialised scope of the journal will appeal to research workers in this field. The annual subscription in this country is 80 lire.

CENTENARY OF THE BENGAL MEDICAL COLLEGE

(FROM A CORRESPONDENT)

THE Medical College of Calcutta is this year celebrating its centenary. The record of the first medical school in British India is interestingly told in the Centenary Volume. Before the days of the Medical College the surgeons recruited by the East India Company trained their own Indian assistants. These began as compounders and dressers and had to pass examinations before they were entitled to higher rank and pay. The demand for these men increased, and there was need for a central institution where a more uniform and better system of education could be imparted. The first medical school was sanctioned in 1822 and was opened in October, 1824; it provided for the education of 20 students; instruction was in Sanscrit and Urdu; and the curriculum occupied three years. No dissections were attempted except of lower animals; but the students saw the post-mortems on persons dying in the General Hospital. Pharmacy seems to have been taught with particular care, for Dr. Bretton, the superintendent, in a report to the Medical Board detailed the tuition in the preparation of sulphate of soda, magnesia, muriatic and nitric acids, calomel, hyd. precip. rubrum, and spirits of wine from rice and goor (raw sugar); methods for the purification of benzoin, camphor, and sulphur were also taught. Dr. Bretton reported that the seniors are each made to describe the component parts of the brain, viscera, bowels, and the structure of the eye, and to answer questions. "The zeal and diligence with which the pupils prosecute their studies even in the least attainable part, i.e., anatomy, afford a very cheering prospect of their ultimately becoming one of the most useful class of servants in the service of the British Government in India." This prophecy has been amply fulfilled.

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THE LANCET

LONDON: SATURDAY, MAY 11, 1935

THE POST-GRADUATE SCHOOL

THE opening by the KING on Monday next of the British Postgraduate Medical School at Hammersmith is the biggest event in the history of medical education which most of us will witness. Some may just remember the founding of an undergraduate medical school but nowhere in the Empire is to be found a centre of post-graduate medical education at all comparable with those which are available to the student on the continent and in America. For the newly qualified student, for the general practitioner, for all medical officers employed by the State, the new school will make provision to meet their own particular requirements. In addition the school hopes to be able to provide for more than purely local requirements. Every year many doctors visit London from overseas. There are officers of the naval, military, Indian, and colonial services on leave or study leave, medical missionaries from the outskirts of the Empire, teachers in foreign medical schools, and consultants from our Dominions. Many of these have been coping single-handed with difficult medical problems and large masses of population for whom they are the sole representatives of Western medicine. They have neither had time nor opportunity to discuss their problems with other colleagues. Their knowledge of recent advances is derived solely from the articles they read in the medical journals. They require guidance and advice to make the best use of the experience available. From the more advanced Dominions many students visit London in the hope of doing post-graduate work. They have been educated to regard London as a great centre of medical knowledge and research. Up to the present they have found difficulty in obtaining facilities to follow up their own particular lines of work. Often they have returned discouraged and disheartened or have gone on to continental clinics. For all these overseas visitors the school hopes to provide opportunities for work and means to further their education. The benefit of such work will be felt far beyond the limits of the United Kingdom. Many visitors from overseas complain that much of the instruction available until now has been didactic and impersonal. The school hopes to remedy this and to conduct its teaching not so much by set courses, as by bringing the student and his teachers into personal contact over their cases in the wards. The intimate association thus established will have its effect long after they have left the school.

This is the practical side of the school. There is another side and one which is equally important. It is not merely a gesture that the school forms part of the University of London. It is the intention that the scientific side of medicine should develop pari passu with the practical side. Speak as we may of the science and art of medicine it is only recently that the science of medicine has been recognised as something more than the investigation, by scientific methods, of problems having immediate practical application. One of the main objects of this school will be to study problems in the scientific spirit—to carry on investigation, not because of the immediate practical value of the solution of the problem, but for the advancement of knowledge. With this object in view facilities for research are being provided. Not only are laboratories necessary, and funds to equip them, but fellowships and staffs sufficiently large to relieve the senior members of much of their routine teaching. Encouragement will be given to young graduates desirous of following up lines of research or anxious to take up the academic side of medicine and they will be provided with facilities to work and study in the school. To men having the necessary qualifications and inclination to pursue research, rather than the more profitable branches of practice, the schools will provide the opportunities. Its object will be no less than to provide a training ground for the future teachers of scientific medicine.

The establishment of this school has aroused world-wide interest. Inquiries have been received from all over the world. Visitors have come from Tashkent and Teheran; students are already attending from New Zealand, India, Persia, Spain, and Switzerland. The ambition of all those concerned in its founding and working is that the school shall become a centre of medical education and research of international repute, worthy of the British Empire and commensurate with its size, responsibility, and influence.

THE SURGERY OF CARBUNCLE

DURING the last decade or two a subtle but notable change has come over the general surgical outlook. The anatomical, mechanistic views which so long held sway have gradually given place to a much broader and more rational conception of surgery. The modern surgeon recognises that vital processes are at work and that his gross interventions do no more than direct or divert natural processes into channels that lead to the ascendancy of reparative activity. With this altered mental conception of surgery many changes have taken place, mostly in the direction of restricting operative measures. Surgery is shrinking in its scope. No longer does the diagnosis of tuberculous disease of the lymphatic glands or joints imply operative excision, or the discovery of a movable kidney bring with it an inevitable fixation, or that of severe constipation a short-circuit. In no department of surgery has the modern critical spirit been more pronounced than in the treatment of septic infections. We have seen the delayed treatment of appendicitis, the higher rank and pay. The demand for these men increased, and there was need for a central institution where a more uniform and better system of education could be imparted. The first medical school was sanctioned in 1822 and was opened in October, 1824; it provided for the education of 20 students; instruction was in Sanscrit and Urdu; and the curriculum occupied three years. No dissections were attempted except of lower animals; but the students saw the post-mortems on persons dying in the General Hospital. Pharmacy seems to have been taught with particular care, for Dr. Bretton, the superintendent, in a report to the Medical Board detailed the tuition in the preparation of sulphate of soda, magnesia, muriatic and nitric acids, calomel, hyd. precip. rubrum, and spirits of wine from rice and goor (raw sugar); methods for the purification of benzoin, camphor, and sulphur were also taught. Dr. Bretton reported that the seniors are each made to describe the component parts of the brain, viscera, bowels, and the structure of the eye, and to answer questions. "The zeal and diligence with which the pupils prosecute their studies even in the least attainable part, i.e., anatomy, afford a very cheering prospect of their ultimately becoming one of the most useful class of servants in the service of the British Government in India." This prophecy has been amply fulfilled.

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A DECADE OF PROGRESS IN ANÆSTHETICS

In a retrospect addressed to the section of anæsthetics of the Royal Society of Medicine on Friday last Dr. C. F. **Hadfield** spoke of the work, covering the last decade, of the Anæsthetics Committee jointly set up in 1924 by the Medical Research Council and the section. He recalled its original personnel; this was composed of three anæsthetists, J. **Blomfield**, C. F. **Hadfield**, and **Francis Shipway**, with three other men of science, F. G. **Donnan**, F.R.S., H. H. **Dale**, F.R.S., and M. S. **Pembrey**, F.R.S. Prof. **Pembrey** died in 1934, but the others are still serving and to their number have been added Prof. C. A. **Pannett** and Dr. W. R. **Spurrell**, reader in physiology at Guy's Hospital.

The first important work undertaken by the committee was directed towards the investigation of well-known agents and concerned nitrous oxide gas. Complaints were being made of undesirable symptoms following the inhalation of laughing gas, which had become popular as an anæsthetic during the war, while at that time nitrous oxide was being freely tried by men little versed in its use, at any rate for major surgery. It was suggested in certain quarters that the gas was to blame, and that probably an impure or faulty agent was being provided by the manufacturers. A thorough investigation by the committee of the evidence brought forward, together with scientific as well as clinical testing of the suspected samples, resulted in a complete vindication of the products on the market. The lesson was enforced that when undesirable symptoms arise during anæsthesia it is rarely the drug that should be blamed; most often the fault lies with the administration of it. A further advantage has been gained from the work on nitrous oxide; this compound had not hitherto been included in the British Pharmacopœia, where it now appears complete with tests and standard of purity. That well-known brands of ether and chloroform are as reliable and free from any but negligible amounts of impurity as is nitrous oxide was also proved by the investigations of the committee. Ether, especially, has received a considerable amount of attention since, a few years ago, a suggestion was made by one or two chemists and anæsthetists of standing that pure ether is not itself an effective anæsthetic and that the properties for which it is valued and used are really the properties of its impurities. The committee was able to organise experimental and clinical tests which disproved this theory and established clearly the anæsthetic properties as those of ether itself.. Dr. **Hadfield** showed also how valuable have been the efforts of the committee in obtaining duty-free ethyl alcohol for the manufacture of pure ether, and in establishing a standard preparation in the British Pharmacopœia. The official standard now laid down is very stringent. To make ether of the new B.P. standard from methylated spirit is nearly impossible. The statement that pure ether can be improved by various alterations and additions occurs from time to time; but the B.P. standard for anæsthetic ether is now so strict that it is impossible to believe that any two ethers conforming to it can differ from one another in potency, odour, irritating qualities, or any other significant feature. Any ether good enough to pass the B.P. tests, and to retain the purity thus assured, may be regarded as completely satisfactory for all anæsthetic purposes. Dr. **Hadfield** went on to describe the interesting experiments carried out for the committee by the late Prof. H. B. **Dixon**, F.R.S., on the ignition points of various gases. These led among other lessons to the important practical one that nitrous oxide is not the inert gas that many anæsthetists have supposed it to be, but may be a formidable agent in promoting explosion in certain conditions of temperature and in the association with other gases.

Perhaps even more valuable than its researches into the use of familiar agents has been the work of the committee in connexion with newly introduced anæsthetics. The procedure adopted of enlisting the coöperation of chemical firms has worked admirably in the public interest. It has been made possible for these firms to introduce a new anæsthetic to the profession with the hallmark conferred on it by a favourable report from a research body, which had the opportunity to submit the new product to the clinical and laboratory tests thought desirable. The first anæsthetic dealt with in this manner was Avertin. This had been made, and was already being freely used, in Germany, before the distributors in this country received supplies. Instead of seeking at once to bring these to the notice of the medical profession the manufacturers agreed not to release avertin except to individuals named by the committee. Only when tests had been completed, and a report on their results had appeared in the medical journals, did the manufacturers offer the drug for free sale. This is clearly an excellent way of introducing into practice potent drugs, such as anæsthetics, whose value and safety depend largely on the conditions of their employment. The practitioner may well be misled by glowing accounts arising from the enthusiasm of a pioneer who has blazed a fresh trail in anæsthesia. He may read: "here is an agent which produces perfect muscular relaxation, is pleasant to take, has no undesirable after-effects, and is quite safe." These words represent the terms under which have been introduced many anæsthetics which time and experience have almost completely removed from practice; but many a tragedy may have happened in the interim.

There are anæsthetic drugs whose methods of employment are suitable only for the use of those who are constantly giving anæsthetics; and there are those which the occasional anæsthetist can employ with safety; it is especially in the differentiation between them that the committee can give help. How to discern which agent or method belongs to the former and which to the latter group is by no means easy for the non-specialist, and his difficulties are increased by the speed with which his patients delayed opening of empyema, the limited operations for osteomyelitis and cellulitis, the non-operative management of carbuncle, and the closed treatment of septic compound fractures. In a paper published in THE LANCET on April 13th, Dr. J. T. INGRAM, dealing with certain septic infections of the skin, goes even further. Writing of whitlows he declares dry heat to be always better than wet, macerating heat; he holds that septic perionychia should never be treated surgically, and he makes an earnest plea for the conservative treatment of boils and carbuncles, believing firmly that these lesions should never be subjected to operative trauma. Similarly Mr. P. H. MITCHINER, from the study of statistics of cases treated at St. Thomas's Hospital, has come to the conclusion, in common with other English and continental surgeons, that operating upon a facial carbuncle raises the mortality-rate.[1]

It is a maxim of surgical therapy, dating from antiquity and based upon countless observations of generations of men, that evacuation of pus is a definitely curative act. Thousands of experiments have proved beyond any doubt the essential truth of this tenet. Hence the assertion that a boil of any size should be treated by an occlusive dressing is not likely to be accepted by surgeons unless it is backed by overwhelming evidence. At the same time the critical attention given to the subject is useful if it does no more than emphasise the undesirability of early surgical intervention in most septic infections. One of the beneficent results of the closer study of these diseases and the reconsideration of surgical practice has been the greater recognition of the predominating rôle of the tissues. Whether it be a boil, a carbuncle, or an acute osteomyelitis, limitation of the disease must finally be brought about by a combination of general and local body reactions. Which of these is the more important it is impossible with our present knowledge to say, but it is an interesting and significant observation that cellulitis may clear up in one region of the body while it may be progressing in another even to a fatal termination. What the insistence on abstention from surgical incision does emphasise is that nothing must be done which might in any way disturb the natural indispensable local reactions of the tissue cells. It is a perfect truth to say that, under certain circumstances, the incision of a boil, a carbuncle, a cellulitis, or a whitlow, is a meddlesome, unnecessary, harmful, and even death-dealing action, but it would be robbing surgery of one of its most powerful therapeutic weapons to forbid such incisions under all conditions. Indeed most surgeons would claim that their personal experience shows that after a certain local response of tissue cells has occurred around a carbuncle a judicious incision not only gives great subjective relief but does seem to hasten the healing process. Scraping, because of the traumatisation involved, always appears to be harmful, but it is difficult not to believe that the simple incision which relieves tension and lessens pain does not also have a directly curative effect by allowing fresh immune plasma access to the formerly tightly distended tissue spaces. It is the selection of the correct time for such incisions that is of such great importance and in this lies the art of surgery, for as yet we have no rules, no measurable phenomena or reactions which can tell us just when the necessary tissue response has taken place.

The decision needs particular care and thought when it is a question of operating on facial boils and carbuncles, especially those of the upper lip and beside the nose; for in such cases dissemination by the veins to the cavernous sinus is not uncommon. Anatomical arrangements no doubt play the major part in this terrible result. Unlike other regions of the body, the face has no deep fascia to limit the infection to the subcutaneous tissue, and the infective process accordingly has direct access to muscles, with their abundant venous channels, and to the nearby facial trunk. Its spread is probably helped also by the involuntary movement of the muscles of facial expression which cannot be wholly checked. In Mr. MITCHINER's figures from St. Thomas's Hospital 2 out of 10 patients with facial carbuncle in whom an incision was made died, whilst of 73 treated conservatively only 5 succumbed. It is true that this series of cases is not large but there are other series from different clinics which point the same way, and though the evidence for the policy of conservatism for facial carbuncle can certainly not be regarded as conclusive, it clearly needs careful consideration. Of other methods of treating carbuncles excision must receive attention in view of the experience at St. Thomas's Hospital. If excision is done, it must be wide to be effective and the better results of excision (over incision) may have been due to the fact that only the smaller lesions were excised. Certainly most surgeons who have practised both measures would agree that healing is much delayed after excision. Whether a carbuncle is treated conservatively or by incision, it is remarkable how much of the epithelium seems to escape destruction by the septic process and survives to form points of regeneration; but all this advantage is lost when it is excised. Incision by the diathermy knife also has its advocates, though it is difficult to see how this can be an improvement on knife incision and indeed how it can give any relief at all. The object of an incision is to provide an exit for pathological humours and to give free flow to immune plasma—both of which objects are frustrated by the diathermy knife, which seals as it cuts. Indeed it is curious how very little is really known of the effect of different methods of treatment on so common a malady. The collection of a mass of controlled data and their correlation are urgently required, and it is essential that we should know how the results of the most satisfactory operative technique compare with those of the short-wave and X ray therapy now widely recommended. Surgical research could hardly be devoted to more useful ends.

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[1] THE LANCET, March 2nd, 1935, p. 507.

points out, there is experimental evidence that an inappropriate antistreptococcal serum or even normal horse-serum may have a deleterious action on the course of the disease. This would not apply, of course, to normal *human* serum which has been used by some clinicians to supply a deficiency of complement in the treatment of septicæmia.

Whether or not with increasing knowledge of the hæmolytic streptococci we shall be in a position to devise sera to combat those infections not primarily toxigenic only the future will disclose. The work of F. T. CADHAM, which was referred to at length in a recent issue of this journal, is an attempt to provide a solution to this problem. In the meantime however Dr. COLEBROOK'S plea for the abandonment of the indiscriminate use of streptococcal antisera in puerperal and surgical sepsis should receive serious attention. It is recognised, though not always remembered, that even under experimental conditions the various sera prepared against bacteria or their toxins often have but little curative action.

ANNOTATIONS

THE JUBILEE FESTIVAL

THE Jubilee ceremonial was a complete success; its object was attained. The King and Queen received an acclaim of personal loyalty and affection such as few, if any, reigning sovereigns have ever experienced; a precocious summer day lent a splendour to proceedings which, despite the gorgeousness of trappings and accessories, were of a simple nature; and organisation of a thorough kind averted the dangers inherent in the massing of crowds. The total size of the crowds which, from stands, balconies, and roofs, from trees, lamp-posts, and walls, from pavement, windowsill, and gutter, saw the Royal procession pass, may be capable of near estimation by experts on such matters; but whatever it was, it was tremendous. And the casualty roll, in proportion to the numbers involved, appears to have been negligible. The whole parade of the St John's Ambulance Brigade was in charge of Captain W. Goodley, M.C., the commissioner of the London Brigade. There were on duty 3000 men and 1000 women. Fifty-seven doctors were also posted along the line of route. There were 71 stations and 25 ambulances. Dr. Ernest McIntyre was in charge of the ambulance arrangements inside the cathedral. In all 7500 cases were treated along the route. In the evening members of the brigade, who had been on duty since 8 A.M., were stationed at the floodlighting and bonfires, and many of them remained on duty until 2 and 3 A.M. The total number of casualties treated during the evening has not yet been received. Members of the brigade will be on duty every evening this week from 8 P.M., and there will be 18 stations in the neighbourhood of the floodlighting. The speed and efficiency of the work rendered by the brigade during the procession were objects of general admiration and in particular impressed the numerous foreign visitors unofficially present.

ROYAL ACADEMY EXHIBITION

THE 167th Exhibition of the Royal Academy of Arts was opened on Friday last, and may be considered fairly to represent modern tendencies on the part of the majority of the public, which tendencies must be responded to by the majority of artists. What may seem very individual tastes are also met at this exhibition by very individual exponents. Among the oil paintings the resolution to be modern and to be different is certainly strained to the point of making some of the representations appear distorted to the amateur or unaccustomed eye, but a good proportion of them meet a desire for beauty, and that is what the majority of people hope to satisfy when looking at pictures. The circumstances of social life to-day have led the class that is best able to buy pictures to live in smaller rooms, and no doubt the exhibitions in the Academy galleries have been rendered more pleasing by the absence of the overcrowding formerly brought about through the size of many of the exhibits. Immense landscapes are few this year, and detailed stories in colour are fewer. With the disappearance of the anecdotal picture all scenes of medical life have gone from the walls, and our profession only enters the exhibition through the medium of the portraits of certain of its members. Among these may be noted a sympathetic and workmanlike portrait of Sir George Newman by Miss M. L. Williams; the presentation portrait of the veteran Sir James Crichton Browne by Mr. Oswald Birley; and an excellent portrait of Dr. G. F. Still by Mr. Gerald Kelly, R.A., which is destined to be hung in King's College Hospital, London. A picture from the brush of Mr. F. W. Elmlie, A.R.A., will take the eye as a skilful piece of work; this is a presentation portrait of Lieut.-Colonel Samman in character as Master of the Society of Apothecaries of London. The portrait of Prof. Cunningham M'Lennan, F.R.S., by Mr. Augustus John, R.A., may fairly be included in a medical category, as Prof. M'Lennan, a distinguished physicist and physiologist, shared the Nobel prize in medicine in 1923.

ARE ANTIBODIES PROTEINS?

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Whether or not with increasing knowledge of the hæmolytic streptococci we shall be in a position to devise sera to combat those infections not primarily toxigenic only the future will disclose. The work of F. T. CADHAM, which was referred to at length in a recent issue of this journal, is an attempt to provide a solution to this problem. In the meantime however Dr. COLEBROOK'S plea for the abandonment of the indiscriminate use of streptococcal antisera in puerperal and surgical sepsis should receive serious attention. It is recognised, though not always remembered, that even under experimental conditions the various sera prepared against bacteria or their toxins often have but little curative action.

ANNOTATIONS

THE JUBILEE FESTIVAL

THE Jubilee ceremonial was a complete success; its object was attained. The King and Queen received an acclaim of personal loyalty and affection such as few, if any, reigning sovereigns have ever experienced; a precocious summer day lent a splendour to proceedings which, despite the gorgeousness of trappings and accessories, were of a simple nature; and organisation of a thorough kind averted the dangers inherent in the massing of crowds. The total size of the crowds which, from stands, balconies, and roofs, from trees, lamp-posts, and walls, from pavement, windowsill, and gutter, saw the Royal procession pass, may be capable of near estimation by experts on such matters; but whatever it was, it was tremendous. And the casualty roll, in proportion to the numbers involved, appears to have been negligible. The whole parade of the St John's Ambulance Brigade was in charge of Captain W. Goodley, M.C., the commissioner of the London Brigade. There were on duty 3000 men and 1000 women. Fifty-seven doctors were also posted along the line of route. There were 71 stations and 25 ambulances. Dr. Ernest McIntyre was in charge of the ambulance arrangements inside the cathedral. In all 7500 cases were treated along the route. In the evening members of the brigade, who had been on duty since 8 A.M., were stationed at the floodlighting and bonfires, and many of them remained on duty until 2 and 3 A.M. The total number of casualties treated during the evening has not yet been received. Members of the brigade will be on duty every evening this week from 8 P.M., and there will be 18 stations in the neighbourhood of the floodlighting. The speed and efficiency of the work rendered by the brigade during the procession were objects of general admiration and in particular impressed the numerous foreign visitors unofficially present.

ROYAL ACADEMY EXHIBITION

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Dr Adams supplies a useful appendix containing a list of preparations known to contain amidopyrin, which in view of the evidence he marshals must be considered a dangerous drug. Some of the listed preparations are recognised hypnotics; others are advertised pick-me-ups likely to be bought without a doctor's prescription.

POUL EDVARD POULSSON

THE death of Prof. Poulsson on March 19th removes an outstanding figure from the world of pharmacology. His text-book, originally published in Norwegian, has been translated into many languages and has enjoyed a popularity remarkable for a translated work. In many, if not most subjects, the Norwegian medical student depends on English, French, and German text-books. But in pharmacology this state of affairs was reversed, and Norway not only has its own text-book on pharmacology, but also the satisfaction of seeing it accepted as a standard work elsewhere. Poulsson was born on April 18th, 1858. After holding various internships at home, he spent three years abroad, studying chemistry under Fresenius in Wiesbaden and pharmacology under Schmiedeberg in Strasbourg. He began to lecture on pharmacology at the University of Christiania in 1891, and four years later was appointed to the chair. In 1928 he retired from this post on reaching the age limit, but he continued active in research till the end, and some of his most valuable work was done quite recently in connexion with vitamins and cod-liver oil at the State Vitamin Institute. Poulsson was also an excellent clinician, and in his early years was the chief medical officer of the Sandfjord hydro. The popularity he enjoyed as much among medical students at home as with fellow scientists at international meetings abroad depended largely on the lucidity of his intellect and his quick grasp of the essentials of any problem with which he was faced. Herein also lay the success of his great text-book which gave the reader the colour and perspective which students do not always find in the writings of their teachers. Poulsson infused some of the same qualities into his lectures. The attention of his listeners was always held by the hope, amounting almost to a conviction, that a flash of wit would give the dead leaves of pharmacology life and substance.

BRITISH ASSOCIATION MEETING AT NORWICH

FOR the second time in its history the British Association for the Advancement of Science is to meet at Norwich, this time under the presidency of Prof. W. W. Watts, who at 8.30 P.M. on Wednesday, Sept. 4th will deliver an address on Form, Drift, and Rhythm of the Continents. The previous meeting was held there in 1868 under the presidency of Dr. J. D. Hooker, botanist and traveller. Sectional addresses will be given during the week that follows by Sir Arthur Smith Woodward (Anthropology) on Recent Progress in the Study of Early Man, by Prof. P. T. Herring (Physiology) on the Pituitary Body and the Diencephalon, and by Dr. Ll. Wynn Jones (Psychology) on Personality and Age. Evening discourses will be delivered by Dr. S. J. Davies on Diesel Engines and by Dr. C. S. Myers on The Help of Psychology in the Choice of a Career. Norwich, although no longer as it was in the Tudor period the second city in the Kingdom, is still the largest city in a purely agricultural district embracing three counties, with a culture and opinion of its own in various branches of art and literature. It is still the "city of gardens" and the new town hall in course of erection is evidence of continued enterprise. There will thus be an agreeable and stimulating background for the meeting. The local hon. secretary is Mr. H. P. Gowen, F.S.A., J.P. General inquiries should be addressed to the Secretary at Burlington House, London, W.1.

THE PITUITARY AGAIN

ON another page of this issue Prof. E. C. Dodds and his collaborators at the Middlesex Hospital describe how they have produced chronic gastric ulcers in animals by means of a pituitary extract. Never before, they believe, have such ulcers been caused by injecting an extract of a normal tissue, and they give reasons for thinking that the apparently large doses given represent no more than an exaggeration of a natural process. If the observations ended here they would be sufficiently striking; but it also appears that the same extract will produce in rabbits a severe anæmia not unlike the pernicious anæmia of human beings. This leads them on to the question whether there is not some hormonal connexion between the posterior lobe of the pituitary gland, the blood picture, and the stomach.

LEARNED EXHIBITS

AT the Conversazione of the Royal Society held at Burlington House on May 3rd there were many exhibits of interest to clinicians. It is impossible to imagine any demonstration that medical science could provide in which essentially physical or chemical methods and apparatus would not play a prominent part. The exhibits of chief medical interest fall into three groups. There are (1) those which have resulted from an approach to some purely medical problem by physical means, (2) those in which medicine has appropriated to its own ends methods and apparatus designed primarily for other purposes, and (3) perhaps of greatest interest, those which give promise of providing clinical science in the near future with new or more refined methods of diagnosis or treatment.

In the first group stand the cathode ray electrocardiograph and the system of cineradiography. The former makes use of a fluorescent screen as the recording element; this has a long after-glow so that the light-accommodated eye is able to view and to examine the completed record for 10 to 12 seconds before it fades. The latter is simple enough to be available as a routine method of examination in the ordinary hospital department; the earlier drawback of prolonged and possibly excessive irradiation of the patient during the taking of a series of exposures has been eliminated by arranging for the X ray tube to be energised intermittently—i.e., each time the camera shutter opens. In the second group we find the ultra short-wave oscillators working on wave-lengths between 2·5 and 6 metres, shown by the General Electric Company. The heating effect of their discharge on several litres of dilute salt solution was demonstrated; they are suitable for medical diathermy and provide a means of generating heat in the deeply placed tissues and organs of the body without immoderately increasing the surface temperature. In the third group may be included a method of continuously measuring small traces of contaminant in a given gas; the ability which it provides of detecting the presence of heavy vapours like hydrocarbons in concentrations of only 1 : 100,000 parts of air may have most valuable applications in the field of the original contention of Marrack and Smith[3] that the amount precipitated is independent of the concentration of non-specific protein in the reacting mixture. Heidelberger and Kendall in 1934, and Dean, Taylor, and Adair[4] this year found that the same amount of protein was precipitated from the antiserum, whether the precipitation took place in one stage or in two; while Heidelberger and Kabat[5] have shown that pneumococci when agglutinated carry down with them from a given amount of antiserum the same amount of protein as is precipitated by the corresponding polysaccharide. These experiments strongly support the theory that this precipitable protein is the actual antibody. This is confirmed by the recovery, from the precipitate formed by pneumococcal polysaccharide and antiserum, of a protein which is active as antibody and can be almost completely precipitated again by the polysaccharide (L. D. Felton, 1932). Breinl and Haurowitz (1930), and more recently L. F. Hewitt[6] have shown that this precipitable protein is chemically indistinguishable from serum globulin.

It is now reported that J. B. Sumner and S. F. Howell, of New York, have prepared the hæmagglutinin of the jack bean as a crystalline protein. In this form, it is stated, it caused perceptible agglutination of dog and cat red blood corpuscles in dilutions up to 1 in 10 million; on human cells it was much less effective, agglutinating them only in dilutions up to 1 in 1000. This protein, however, cannot be considered an antibody, since it occurs naturally—not in response to the stimulus of the introduction of a foreign substance; nor is there evidence that it has the specificity characteristic of most antibodies. Nor are such crystalline agglutinins a new discovery. Edestin will agglutinate sheep and human red blood corpuscles in dilutions up to 1 in 10,000, as was shown by B. White and O. T. Avery as long ago as 1913. Even tannin acting on red blood corpuscles in dilutions up to 1 in 10,000 will reproduce phenomena (agglutination, hæmolysis, complement fixation, and preparation for phagocytosis) resembling those caused by antibodies, though lacking the characteristic specificity (Reiner, 1929). Nevertheless the discovery of a pure protein agglutinin which acts in such extreme dilution may afford valuable information on the mechanism of the action of antibodies.

TUBERCULOUS MILK IN BRISTOL

IN another column Prof. R. H. Parry and Prof. I. Walker Hall, respectively medical officer of health for Bristol and director of the preventive medicine laboratories, tell us of the infected farms in the area from which Bristol draws its milk-supply and which act as reservoirs for the dissemination of bovine tubercle bacilli. Last year 5 per cent. of 485 samples of milk from one area were found to contain virulent bacilli, but it proved possible to track the infection down to 14 farms, the milk from which was intermittently tuberculous over several months. It would indeed have been an achievement if these 14 reservoirs of infection could have promptly been cleared, but the inevitable delay in procedure, of which several striking examples are given, resulted in the supply in one case of known tuberculous milk for three months or more before clearance and the distribution of the herd took place. In two cases the supply was still infected after six months. Profs. Parry and Hall suggest lines of action which would lead to more effective protection of the community and are prepared to justify them as less disturbing to economic conditions than is routine tuberculin testing. That is not the only direction in which Bristol looks for progress. The efforts made in recent years to educate the farmer and dairyman in the production of milk have borne fruit in a uniformly improved standard. This fact is not however widely enough appreciated, for only a few consumers have followed the developments in the industry. The introduction by the Marketing Board of the "milk in school" scheme now offers an opportunity for the diffusion of this information via the school-children to the general public. The preventive medicine and agricultural advisory departments of the University of Bristol are accordingly providing a course of lecture-demonstrations for school teachers on such subjects as production, nutrient values, health and disease in the cow, and the means of increasing the safety of milk and storage of food. Accompanying the syllabus is a brochure on milk as a food, written in simple language as a lesson for children under 12 years, with a supplement for those over 12 years. The children are invited to write essays or make drawings, suitable for posters, upon the subject "A Glass of Milk," and prizes will be awarded to senior and junior boys and girls. The Bristol education committee is coöperating in all these arrangements.

AGRANULOCYTOSIS

IN the last few years there have been many reviews and reports of cases of the peculiar syndrome commonly known as agranulocytic angina, agranulocytosis, or malignant neutropenia. (Since a sore-throat and mouth, though often, is not always associated with this condition, probably the two last names are preferable.) Dr. E. W. Adams has now reviewed "certain aspects" of this syndrome in a report issued by the Ministry of Health.[1] He emphasises the value of pentose nucleotide in the treatment and the importance of amidopyrin in the ætiology. Certain of his statements—some of them lacking exact references—are hardly in agreement with the authoritative review of Jackson and Parker,[2] who have had extensive experience of the disease. Dr. Adams, for example, says that it may occur in children, though they are definitely of opinion that no authentic case has been seen under the age of ten. He also states that the total white cell count is not necessarily lowered, whereas Jackson and Parker and the majority of other workers agree that leucopenia is a sine qua non of the syndrome. In writing on the ætiology of the disease, Dr. Adams does not mention any of the papers describing the pathological findings in hæmopoietic tissues; he is content with the statement under the heading of clinical features, that "after death the bone-marrow is found to be destitute or almost destitute of granulocytes." Many observers, however, have shown that at least in patients dying in the early stage of the disease, though mature polymorphs may be absent, there may be an excess of stem cells; and it was this finding that led FitzHugh and Krumbhaar[3] to make the important suggestion that an arrest of maturation at this level is a key to the ætiology of

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[3] Marrack, J.: Med. Research Council, Spec. Rep Ser. No. 194, 1934, p. 52.

[4] Dean, H. R., Taylor, G. L., and Adair, M. E.: Jour. of Hyg., 1935, xxxv., 69.

[5] Heidelberger, M., and Kabat, E. A.: Jour. Exp. Med., 1934, lx., 643.

[6] Hewitt, L. F.: Biochem. Jour., 1934, xxviii., 2080.

[1] Min. of Health Rep. on Public Health and Med. Subjects, No. 76. London: H.M. Stationery Office. 1935. Pp. 21. 6d.

[2] Jackson, H., Jr., and Parker, F.: New England Jour. Med., 1935, ccxii., 137.

[3] FitzHugh, T., Jr., and Krumbhaar, E. B.: Amer. Jour. Med. Sci., 1932, clxxxiii., 104.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LI.—THE PROGNOSIS OF TABES DORSALIS

It is well to regard the prognosis of tabes from two aspects: (1) as regards life, and (2) as regards incapacity.

Expectation of life.—The disease is compatible with 20 or more years of life and thus, in favourable circumstances, need not affect the expectation of life of its victim. Where, however, the original infection has been severe, if tabes develops at all, the interval between infection and development is likely to be short (in years) and the duration of life in such a case will be much less than the average for tabes.

It is significant that while the death-rate from syphilis (per 1000 live births) under one year of age has now fallen to roughly one-third of its pre-war level, and the death-rate from general paralysis has been halved in the same period, doubtless owing to modern therapeutic measures, the death-rate from tabes still remains much where it was; it now averages about 19 per million of the population, as against 21 before the war. The incidence of tabes in men is about ten times what it is in women. About 10 per cent. of syphilitics develop nerve syphilis, and less than half of these are tabetics. There will be general agreement that the incidence of tabes has been reduced in recent years, but as the duration of the disease so greatly exceeds that of general paresis, the death-rate takes much longer to show an improvement.

Incapacity.—The form of incapacity varies—all the disabling features are not found concentrated in any one case, however severe the infection may have been in the first place. The two main groups of disability are those affecting (*a*) eyesight, and (*b*) locomotion. It is noteworthy that even a definite optic atrophy may be stayed in its progress if detected early, and efficient treatment in the nick of time may save for the patient at least a modicum of vision.

IMPORTANCE OF EARLY DIAGNOSIS

The outlook in a given case of tabes dorsalis depends very largely upon an early diagnosis, followed by efficient and vigilant treatment. Thus much depends on the intelligent interpretation of a suggestive sign or symptom—it may be shooting pains, a perforating ulcer under one great toe, a difficulty in beginning to urinate, the presence of cystitis, the sudden appearance of a squint, or the accidental discovery of a single sluggish pupil or of unequal pupils. The prognosis of the individual case depends on whether full investigation and intensive treatment follow immediately. On the other hand, a diagnosis of tabes must not be accepted without verification. Many of us have been told that knee-jerks are absent when they are in fact present, albeit difficult to obtain. In this connexion it should be remembered that ankle-jerks are always lost first, and if they are retained in any case the apparent absence of knee-jerks need not cause alarm.

ARREST IN ADVANCED CASES

It is often stated that a case of tabes should never be allowed to reach the ataxic stage. This is true, but should not be taken to mean that if ataxia has begun to show itself treatment will certainly not be effective. Except in those rapid cases which follow a year or two after the original infection, where the prognosis is always hopeless, there is a good chance of improvement even when ataxia is manifest. But no treatment can benefit a blindness, already absolute, from optic atrophy, though I have under my observation at the moment a woman in whom the progress of the atrophy has been stayed and some degree of vision preserved following efficient treatment. I have had more than one case in which a single Argyll Robertson pupil has again become reactive to light. There are suggestions that the optic atrophy case just referred to may become mental, a point which suggests the necessity of bearing in mind the fact that tabetic psychoses occur as well as taboparesis; and the prognosis of the one is very different from the prognosis of the other. Just as a "leg" tabes will not go blind, so, as a general rule, an "optic" tabes will not later develop any ataxia. There is no stage in any case of tabes at which "arrest" may not occur. If, as I have said above, early onset of tabetic symptoms after infection means as a rule a rapid course, late onset, always presuming that we can exclude taboparesis, means a slow one. But in these cases expectation of life must to some extent differ with social status. A poor patient cannot so easily maintain his general condition, so as to prevent intercurrent infection, as can a prosperous one. Ascending infections of the genito-urinary tract make quicker headway and occur more often in the poorer type of patient. A well-to-do man with "leg" tabes may, as is well known, go about for years in a wheel chair, mentally very alert, beating everyone at bridge, and having no other disability save that of locomotion.

RE-EDUCATION: CRISES

There is no limit to the duration of the pre-ataxic stage, and some cases never go beyond it. Here re-education may work wonders in postponing or preventing the onset of developed ataxia. The various crises are never fatal at the time, and it has been said that they do nothing to shorten life. This has not been my experience. In some, crises seemed to herald an advance of the disease; in others the general resistance to infection had been so diminished that an ascending urinary infection was soon fatal. This was so, for instance, in one man with gastric crises which failed to respond to chloretone; morphia had to be given, eventually in very large doses, and for so long that debility and cachexia became pronounced. Another of my intestinal crises cases, having survived the attentions of a surgeon who had treated him as an acute abdomen, and having got through subsequent attacks aided by medical treatment, in the end died of apoplexy. An elderly patient becoming bedridden as the result of the collapse of a limb following a Charcot's joint may soon die from extensive bedsores, and the same result may occur where a case of tabes is associated with a fracture due to fragilitas ossium. Evidence of syphilitic aortitis is not a discouraging feature.

URINARY INFECTION

A rule of treatment upon which the individual prognosis depends more perhaps than any other is regular testing of urine and examination for retention with overflow. The patient may not complain of industrial hygiene. The use of phenolic and basic synthetic resins for the purification of water was demonstrated; they reduced both acidic and basic dyestuffs to insignificant traces, and they removed completely all the saline contents of sea water to give drinking water.

In a lecture on Dr. Robert Hooke, F.R.S., Mr. Walter Adams reminded us that July 18th of this year is the tercentenary of his birth. Side by side in another room were demonstrated Hooke's own microscope and the earliest existing photograph, taken just 100 years ago, by Fox Talbot. These two centenary exhibits are the original products of developments in physics and in chemistry to which clinical medicine owes more than can be summarised and without which medical science would be non-existent. It would perhaps have emphasised their importance and certainly have added to their dramatic value to have shown alongside these two early exhibits of photography and microscopy the two latest developments of photomicroscopy which were demonstrated: an apparatus for making stereo-micro-photographs and a twin film polygraph and strobograph for recording the very rapid and fugitive movements of the smallest animalculæ. Dr. Adrian's demonstration of the Berger rhythm aroused great interest. Using himself as the experimental subject, the resting rhythm was clearly and regularly seen after projection of the oscillograph tracing on a large screen by means of an epidiascope; the abolition of this rhythm brought about by visual stimulation, by mental effort of an unusual degree, and by unexpected cutaneous stimulation occurred regularly. The results so far achieved have been already commented upon (see THE LANCET, Jan. 12th, p. 96), but although no new results were communicated or demonstrated Dr. Adrian provided a model demonstration with an adequate and very clear introduction.

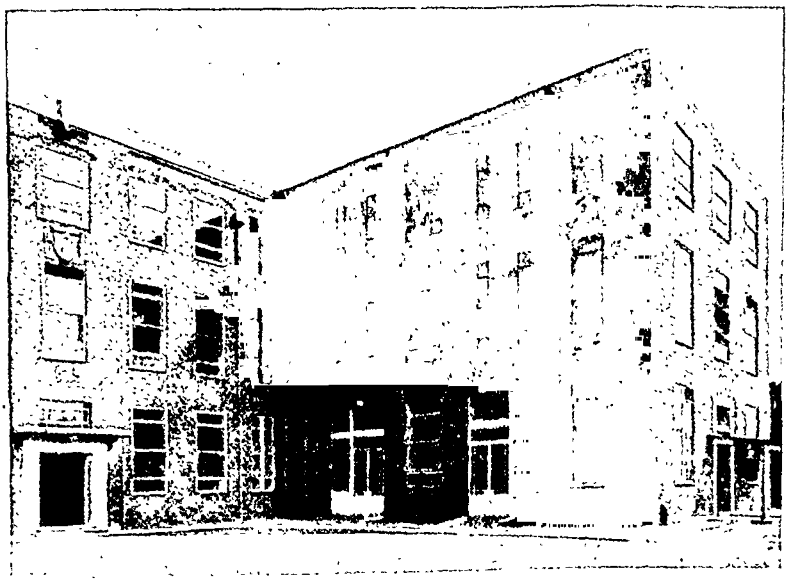
Another popular exhibit was that of some apparatus used in research into the psychological and physiological qualities necessary in motor drivers. The subject examined sits in a small motor-car, hanging in front of which is a screen upon which a cinematograph film of a model landscape is projected; the normal controls of the car control the position of this landscape on the screen and its apparent rate of approach. Movements of the car in relation to the surface of the road depicted in the landscape are automatically recorded, and from this record may be obtained a measurement of the reaction times of the driver when faced with different problems in car management. Since the time factor is one which enters so largely into intelligence testing and other forms of examination for mental ability, it seems likely that this form of test could be adapted to problems less specialised than that of car driving and might be made the basis of assessing vocational ability along many different lines.

Sir Edmund Spriggs will deliver the Croonian lectures of the Royal College of Physicians on May 14th, 16th, and 21st. His subject will be a Clinical Study of Headaches. The lectures will take place at the College at 5 P.M., and any member of the medical profession will be admitted on presentation of his card.

Surg.-Captain Sheldon F. Dudley took up his duty on May 1st as deputy director-general of the Royal Navy from the R.N. Hospital at Chatham. He was formerly director of medical studies and professor of hygiene, pathology, and tropical diseases at the R.N. College, Greenwich. In his Milroy lectures delivered in 1931, he drew some lessons of the distribution of infectious diseases in the Royal Navy; his success in limiting the spread of infectious disease at Greenwich Hospital School is common knowledge.

SOCIETY OF PUBLIC ANALYSTS.—At a meeting of this society held in London on May 1st, Dr. G. Roche Lynch and Mr. R. H. Slater, D.Sc., described a putrefaction product of toxicological significance. A crystalline para-phenylpropionic acid was formed by anaerobic putrefaction in a body which had been buried in an unsealed lead coffin, and had consequently lain for a considerable time under water without exposure to the air. This compound was extracted with ether from the acid aqueous liquid obtained in the Stas-Otoo process, and until its identity was established it was suggestive of the presence of one of the barbituric acid derivatives. Dr. Roche Lynch and Dr. Slater also reported on the toxicological examination in a fatal case of poisoning by meta fuel.

BRITISH POSTGRADUATE MEDICAL SCHOOL



THE accompanying photograph shows the entrance to the new out-patient department of the Hammersmith Hospital of the London County Council attached to the British Postgraduate Medical School, which is to be opened by H.M. the King on Monday next. The block of buildings, comprising school and out-patient department, makes up the east wing of a teaching hospital of 400 beds which is to be devoted solely to post-graduate medical education. Chairs of medicine, surgery, midwifery, and pathology in London University have been established at the school. In a recent issue (THE LANCET, April 7th, 1934) we reproduced detailed plans of the medical school and of the new surgical and maternity block, and we propose to give in an early issue an illustrated account of the equipment and system of teaching at the school.

rules by which the diagnosis of influenza will be justified, though it may be permitted him to point out certain difficulties and plead for a more refined and intensive clinical analysis of cases of the influenza type. I propose rather to consider here certain experimental facts which have been accumulated during the last three years, and which appear to me to show that it should become possible in the future to separate with precision epidemic influenza from other diseases which simulate it.

It is clear that if the cause or causes of influenza could be identified with certainty a great step would have been made in this direction, and I believe it is now being gradually proved that the *primary* infective agent in epidemic influenza is a filtrable virus. It is with this aspect of the subject that I propose to deal. It must not be supposed that the bacteria which have been cultivated from cases of influenza are of no significance in the human disease. There is a great deal of evidence which shows that the visible bacteria are very important in particular cases, and it should be stated that Pfeiffer's bacillus or *Hæmophilus influenzæ* is still regarded by many observers as the prime cause of the disease and many of its complications. I shall not go into this question in detail, but if a virus is proved to be present in the early stages of influenza infection it seems to me that the visible bacteria, including Pfeiffer's bacillus, must be regarded as secondary invaders of tissues damaged by the action of the virus.

The Virus Hypothesis

It was suggested about 1914 that influenza was really a virus disease. At that time knowledge of viruses was meagre, and although we know much more to-day about virus diseases we do not yet know a great deal about the viruses themselves. The view with the greatest following at present is that viruses are exceedingly small micro-organisms with very strict parasitic habits. The small particles which can be demonstrated in suspensions of viruses are so minute that special methods are required for their elucidation, but it does seem that we are gradually getting to know something of the shape and form of virus particles. The parasitism of many viruses is so strict that they will only grow in one or two species, and sometimes show a striking preference for certain tissues of the host. They cannot be cultivated, with perhaps one or two exceptions, on artificial media apart from living cells.

The virus hypothesis for influenza postulated, therefore, that the infective agent was so small that it could be separated from visible micro-organisms by filtration, that it was most probably an obligate parasite incapable of growth except in the animal body and that the parasitism might possibly be so strict that it would grow and cause disease only in man.

This hypothesis became prominent during the pandemic of 1918–19, for at that time a number of workers ventured to question the claims of *H. influenzæ* to the rôle of principal villain in the drama of influenza, although this organism had held an almost undisputed position since the end of the pandemic 1889–90. There was not much experimental evidence in favour of the virus theory at this time because no one knew of an experimental animal which was susceptible to infection with human influenza. Recourse was therefore made to human volunteers. Nicolle and Lebailly (1918) and de la Rivière (1918) record what appeared to be successful infections with bacteria-free filtrates of material from influenza patients. Yamanouchi, Iwashima, and Sakakami also appeared to be successful in a larger series of experiments. But against these must be placed the negative results of MacCoy, Rosenau, and others (1921), Friedberger and Konitzer (1919), Lister and Taylor (1919). All these experiments on human volunteers are of very doubtful value. Man is an exceedingly bad experimental animal and almost useless when he is used for experiment during an epidemic. One can never be sure that the experimental subject is susceptible and therefore negative results can be discounted; while positive results, though perhaps more significant, are always open to the suspicion that infection was picked up in some accidental manner. On the other hand, in the absence of an epidemic there is no supply of virus to test on presumably susceptible subjects.

The Ferret Susceptible to Influenza

In 1933 Smith, Andrewes, and I began to hope that we had discovered a method of studying influenza in laboratory animals. We found that it was possible to transmit a disease to ferrets by inoculating intranasally filtrates of pharyngeal washings from cases of epidemic influenza in man. The filters we employed were Gradocol membrane filters made and supplied by our colleague, Dr. Elford. They had an average pore size sufficiently small to keep back all visible bacteria, and as far as we could determine, the filtrates we used were bacteriologically sterile. We obtained 5 successful transfers from 8 cases of "influenza" and then the epidemic disappeared. Subsequent to this, throat-washings from sporadic cases diagnosed as influenza and from normal subjects failed to infect ferrets, and nasal secretions from cases of "common cold" were also without effect. The disease in the ferrets was of varying severity and would pass from a sick animal to a healthy one by simple contact, in other words the experimental disease was contagious.

Isolation of experimental ferrets.—Experience with dog distemper had shown us that somewhat elaborate precautions were necessary to prevent the accidental spread of any highly infectious disease, and we immediately adopted the scheme of rigid isolation which was evolved for the work on dog distemper.

The plan is to house all experimental animals in a special building which can only be entered through a passageway, the floor of which is constantly covered with a lysol bath three inches deep. All workers therefore wear rubber boots and rubber overcoats. On entry into the building boots and coats are washed down with lysol. There is a central hall round which are a number of cubicles, each of which is completely separated from the others and from the central hall. Each experimental ferret is placed in a special cage and the cage in a cubicle. Before entry into a cubicle the worker or attendant is swabbed down with lysol so that any infectious material, dust, sprayed droplets, &c., sticks to the damp surface and is subsequently sterilised by the lysol wash which follows on emergence from the cubicle.

A routine of this kind is very irksome and it slows down the work enormously, but if the ritual is carried out faithfully we can be confident that the experimental animals are safe from accidental cross-infection from one to another. In addition to being cumbrous the method is costly, for a special building is required and a reliable staff of attendants. Lack of adequate accommodation such as we desired compelled us to abandon some of our original strains and work more intensively with one in particular. This strain was recovered from one of the team (W. S.) who contracted influenza soon after the investigation was under weigh. There is no proof, but it is quite possible discomfort and one may have no idea that any urinary trouble has begun. But unless the condition is discovered early and efficiently treated, urinary infection takes place and the patient goes downhill rapidly. In the same way severe bone disease and foot sepsis may occur before a perforating ulcer, being anæsthetic, has been noticed.

LABORATORY FINDINGS

The inferences one is justified in drawing from laboratory findings as regards prognosis deserve notice. In a doubtful case the assurance that the blood Wassermann is negative is not enough. We must be sure that there is no pleocytosis of the cerebro-spinal fluid, for this is a constant and a very early sign of tabes. The cerebro-spinal Wassermann is positive in over 75 per cent. of cases if 1 c.cm. of fluid is used; this is a rather larger figure than the percentage of blood-positive Wassermanns. An early change to negative under treatment is of good omen. A diminution in the lymphocyte count of the cerebro-spinal fluid under treatment is also a good sign, and is the easiest change in laboratory findings to obtain; whilst a high pre-treatment count suggests that treatment is worth while and prognosis relatively good. A diminution of cerebro-spinal protein under treatment is a favourable sign. The globulin, however, is much less likely to alter under treatment. A colloidal gold curve which is luetic in type (0014320000) is also favourable, a paretic curve (5555443200) being of course the reverse. Where arrest takes place there may be no curve, and the cerebro-spinal fluid may become normal again. It must be remembered, however, that even in a tabes which is clinically advancing the blood and even the cerebro-spinal fluid may come to yield and to continue to yield a negative Wassermann. If either or both (blood and fluid) become negative in a case in which they have been previously positive six-monthly tests must be done, and the signs and symptoms must always be regarded as over-riding any tests from the point of view of prognosis.

TABOPARESIS

It is absurd to assume that because a patient with tabes does not at the onset suggest taboparesis he will never at any time develop paretic symptoms. If such symptoms do appear then, even with malarial treatment, which is not so successful here as in ordinary general paresis, the patient is not likely to survive more than, at the most, four years. It is just as important to be on the look-out for the development of taboparesis as it is to watch for urinary infection, pulmonary tuberculosis, influenza, or pneumonia, any of which may be insidious in onset or development. The full examination of the cerebro-spinal fluid may here be the only sure guide.

The warning not to confuse psychoses with taboparesis has already been given. Juvenile tabes progresses fast if it develops early, slowly if it comes on late, unless it is aggravated in its progress by an acute infection or by an accident. Similarly with conjugal tabes. It is just as worth while to treat juvenile tabes efficiently as it is the adult form. Alcoholic tabetics do badly, and the disease progresses rapidly.

In all forms and at all ages the maintenance of the general condition is of cardinal importance to the prognosis. Next to this comes the success with which re-education can be achieved.

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SPECIAL ARTICLES

EPIDEMIC INFLUENZA: A VIRUS DISEASE.*

BY P. P. LAIDLAW, F.R.C.P. Lond., F.R.S.

INFLUENZA is one of the greater scourges of mankind. In epidemic form, on many occasions, it has spread throughout the world causing incalculable damage. For example, the pandemic of 1918–19 is estimated to have involved 500,000,000 people and cost the world upwards of 15,000,000 lives. Previous to this (e.g., 1889–90 and 1836–37) other pandemics of corresponding magnitude had taken their toll of humanity. Between the great pandemics, often following them closely, lesser outbreaks have occurred from time to time, involving a country or a part of it, a barracks or a school. In addition to these patches of localised infection there are sporadic cases of disease which are often diagnosed as influenza; but we have no assurance that these sporadic cases are really the same disease and have the same ætiology as the epidemic cases. It is, in fact, very doubtful if they always are, and I, for one, feel that many of these cases would be better labelled with the old war-time diagnosis, honest if non-committal, P.U.O., or pyrexia of unknown origin. Further, we have no proof that the different epidemics are due to one and the same cause; there are indeed difficulties in the way of accepting this view literally. Yet there is such great similarity in the spread of the disease and the symptoms recorded for different epidemics and pandemics that it seems fairly certain that if there are multiple causal agents these must be close relatives and connected in some way.

Epidemic influenza is characterised by great infectivity with rapid spread in a population, a short incubation period of about 48 hours, a very sudden onset with fever, malaise, and depression, passing on to prostration. Pains in the head, back, or limbs are common. A coryza and some pharyngitis can usually be detected. After a few days' fever, in the majority of cases, recovery sets in and the temperature subsides to normal; but there is left behind a condition of depression and weakness quite unexpected in view of the short period of fever and the slight physical signs. In a proportion of cases tracheitis, bronchitis, and broncho-pneumonia may develop when the *mortality-rate rises steeply*. During an epidemic the diagnosis is relatively easy, for many severe as well as mild cases are seen; and all stages of the disease may be observed on one day. There is, moreover, ample evidence of great infectivity. But in sporadic cases where evidence of infectivity is lacking and the symptoms are often milder it may be impossible to reach a sure diagnosis. Again, at the beginning of an epidemic or in the early stages of the disease, it may be very difficult to diagnose a case with confidence.

It is not the province of a pathologist to discuss the clinical aspects of the disease or to lay down

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* The Linacre lecture of St. John's College, delivered at Cambridge on May 7th, 1935.

that he became infected from the experimental animals. It is suggestive that his illness developed at a time when the epidemic had almost disappeared and chances of outside infection seem to have been remote.

The virus.—The infecting principle is abundant in the nasal mucosa of sick ferrets, and for routine supplies of virus the diseased mucous membrane is ground in a mortar, emulsified with saline, and the resultant suspension is centrifugalised. The opalescent supernatant fluid is rich in virus and contains small numbers of visible bacteria, which may be eliminated if desired by filtration through a suitable membrane filter. Infective filtrates have been specially examined for the small filter-passing organism *Bacterium pneumosintes* of Olitsky and Gates (1921) because this small organism was believed by the two discoverers to be the primary infective agent of influenza. We have never encountered it. Inoculation of culture media, suitable for the multiplication of *B. pneumosintes* with our virus followed by incubation, results in total loss of infectivity. The virus has, in fact, not yet been cultivated on artificial media. It is destroyed by heating to 56° C. for an hour and it will withstand drying or storage in glycerol for many weeks.

A remarkable feature of this virus is the fact that it will only infect through the respiratory tract. Subcutaneous, intravenous, intraperitoneal, or intracerebral inoculations are without effect. Again, the virus can only be recovered from the respiratory passages or lungs. Blood, cerebro-spinal fluid, liver, spleen, and brain do not appear to contain any virus, even at the height of the disease.

The facts are very remarkable. Virus can be recovered only from the nasal mucosa and the lungs which are, after all, surface structures; it cannot be recovered from the deeper tissues. Yet it is clear that the virus or its products does invade the body, as is shown by the symptoms of disease and the production of circulating antibodies. What may be the explanation of the facts we do not know, but they help to differentiate the virus from others, and they must be taken into account when considering the full explanation of the disease.

Influenza in the ferret.—The virus disease in the ferret is characterised by an incubation period of about 48 hours followed by fever in which the temperature may reach 107° F. This is followed by a remission and thereafter a second febrile period usually lasting three or four days, during which there are symptoms of nasal catarrh, such as sneezing, nasal obstruction, mucopurulent discharge from the nose, and sticky accumulations round the nares. Throughout the illness, but varying greatly from case to case, there is prostration and occasionally signs of muscular weakness. The disease is never fatal when ferrets are inoculated without an anæsthetic. Certain strains of streptococci in conjunction with the virus do produce a more severe disease and prolong the illness, but do not cause a fatal outcome. Hæmophilic organisms from ferret, pig, or human beings do not appear to modify the disease materially.

When the intranasal instillation of virus is made, in series, into ferrets which are anæsthetised with ether (Shope, 1934) pneumonia develops in the inoculated animals. Without an anæsthetic the recently isolated human strain of virus never causes pneumonia, but after passage through many ferrets pneumonia may occur. The cut surface of the solid lung is usually bacteriologically sterile, and emulsions of solid lung, though rich in virus, are usually free from bacteria, and there is no doubt that the virus by itself can, and on occasions does, cause a characteristic pneumonia.

Sections of the nasal mucosa, from ferrets killed in the later stages of the disease, always show signs of acute inflammation, vascular engorgement, dilated lymph channels, catarrh of the superficial epithelium, loss of all ciliated cells, and collections of mucopurulent exudate in the air spaces. Many polymorphonuclear leucocytes can be seen on their way through the remains of the epithelium. Inclusion bodies have not been detected.

Immunity.—Ferrets which have recovered from an attack of the disease are immune to further infection for a few months, but after six or seven months they gradually become susceptible once more. Reinfection at about this time leads to a sharp febrile attack with the usual symptoms of the primary attack, but the second attack is usually milder and of shorter duration than the first.

Serum from a convalescent ferret contains antibodies to the virus. These may be demonstrated by mixing virus and serum together and allowing the mixture to stand at room temperature for ten minutes and then instilling the mixture into another ferret's nostrils. Normal ferret serum has no neutralising power. Convalescent human serum, and in fact most human sera, also contains antibodies for the virus; indeed, we have only found two human sera which fail to neutralise when mixed with virus. It has been found to be possible to prepare antiserum in bulk by oft-repeated subcutaneous injection of virus into horses and to demonstrate its potency by admixture of serum with virus as just described for ferret serum.

Influenza in Mice

In 1934 we discovered that the virus from ferrets could be adapted to mice. This means that it was found possible to infect mice when ferret virus was instilled into the nostrils of mice which had previously been anæsthetised with ether. In the first group of mice so treated only a small proportion showed signs of infection. Inoculations with material from the sick mice to others, however, led to more regular infection and a more serious disease. After several transfers the virus infected nearly 100 per cent. of mice and induced an illness which was very often fatal. The disease in mice is essentially a pneumonia which spreads from the larger bronchi to the periphery of the lung, and in fatal cases the process results in almost complete hepatisation of the lungs.

I do not propose to enter into a consideration of the histological changes which are to be found in the pneumonic lung. For our present purpose it is sufficient to point out that the cut surface of the solid lung is usually sterile, and that small fragments of solid lung, on incubation in culture media, often show no growth of visible bacteria. The organisms which are occasionally encountered are of different types and can have no causal relationship to the disease process, since they can be filtered off and typical infection produced by the filtrates. In the mouse, then, as in the ferret, pneumonia may be produced by the virus, and in the mouse this pneumonia is frequently fatal.

The upper parts of the respiratory tract of mice do not seem to be susceptible to attack by the virus as is the case in the ferret. The nasal mucosa, for example, appears to be unaffected even in fatal cases. Corresponding with this there is no sneezing, and as mice do not cough dissemination of the disease does not occur. It is thus possible to conduct experiments on mice without the elaborate isolation precautions and perhaps muscle tenderness, cough, and a laboured jerky breathing. The duration of the disease is short, usually from 2–6 days, and apparent recovery is almost as dramatic as the onset. Fatal cases show, according to Shope (1931) "an extremely œdematous type of broncho-pneumonia."

The analogies with human epidemic influenza are very striking. In both we have high infectivity and rapid spread of the disease, short incubation period, sudden onset, high fever, prostration, muscular weakness, cough, and in fatal cases extensive pathological changes in the lungs. The ætiology of this disease remained obscure for some years, but Shope (1931, 1932) succeeded in demonstrating in a series of brilliant researches that this pig disease is a complex; and results from a dual infection with (*a*) a filtrable virus which by itself is almost harmless for pigs, and (*b*) a special hæmophilic organism, *Hæmophilus influenzæ* (*suis*), which alone is powerless. Infection with a mixture of virus and bacillus regularly produces a serious and sometimes fatal disease in susceptible pigs. Now, the filtrable virus from the pig disease will infect ferrets, as shown by Smith, Andrewes, and Laidlaw (1933), confirmed by Shope (1934), and produce in them a disease which is almost indistinguishable from the disease caused by the human strain of influenza virus. There is a similar short incubation period, the same type of fever, almost identical symptoms and precisely analogous changes in the nasal mucosa. On the whole, the porcine strain of virus seems to be more virulent and, in the earlier transmissions, possess a greater affinity for ferret lung tissue. Ferrets which are immune to one strain of virus are always resistant and sometimes immune to the other. Mice, under light ether anæsthesia, can be infected with the porcine strain and show lung lesions which are indistinguishable from those following infection with the human strain.

Immune sera can be prepared in ferrets and horses, and tests of these sera on ferrets and mice prove that the two viruses have some antigenic elements in common, but also possess different constituents.

DISCUSSION

The significance of these results is very great. Shope has proved, for the pig, that the combination of virus plus hæmophilic organism is much more potent than was to be expected from summing the mild diseases caused by the two agents acting separately. By analogy it seems highly probable that a similar state of affairs will also hold for man. Under this view the virus alone would cause the milder uncomplicated cases of influenza of short duration, which are so common during epidemics, and that dual infection with virus plus hæmophilic bacilli would be responsible for cases with complications such as sinusitis, purulent bronchitis, broncho-pneumonia, &c. If the secondary invader were varied or there were more than one, many of the remarkable bacteriological findings in cases of epidemic influenza of the past would be adequately explained. The proof or disproof of this conception of the disease in man must await intensive study of complicated cases during an epidemic.

But there is more than this to be gained from a consideration of the swine influenza virus and its activities. As we have seen, the pathogenic activities of human and porcine strains of virus are very similar for ferrets and mice. Are they similar for pigs? In 1933 my two colleagues and myself attempted to infect pigs with our 1933 strain of virus from man, but without success. Quite recently, however, Elkeles has informed us (private communication, 1935) that he has achieved successful results. He concludes: "That the virus obtained by Smith, Andrewes, and Laidlaw from influenza patients when inoculated, especially in combination with *H. influenzæ*, intranasally to young pigs, is able to produce in them clinical and pathological symptoms of a characteristic disease." The symptoms he records, and the post-mortem appearances he describes, are similar to those recorded by Shope for experimental swine influenza. If Elkeles's results could be extended to show that it was possible to produce a disease in pigs with human virus which was capable of inducing a typical epizoötic in hogs, the pathogenic similarity between the two virus diseases would be complete; but the facts as they stand are significant enough.

We have two viruses of different origin capable of causing similar diseases in three species of animals—ferrets, mice, and pigs. These two viruses have been shown to have certain similar antigenic constituents as well as certain different ones. The conclusion seems inevitable that the viruses are really close relatives, and Koen's view regarding the ætiology of "hog flu" becomes more than plausible. It seems to me, indeed, exceedingly probable that the virus of swine influenza is really the virus of the great pandemic of 1918 adapted to the pig and persisting in that species ever since. Adaptation of a virus to a new species has been accomplished experimentally again and again in virus diseases. It appears to consist merely in an alteration in the aggressiveness of the virus for the new host. This important modification of virus activity has not yet been shown to be associated with alteration in the antigenic structure of the virus. If our conclusion is justified it would mean that the virus of the 1918 pandemic, though closely allied to that now current in the human population, was really slightly different. This very difference between the two strains of virus gives us a possible explanation for the pandemic.

At some time or place a variant of the current influenza virus appeared and this variant might be expected to flourish in a population which was resistant to the parent strain. It is not quite the same thing as a new virus attacking a fully susceptible population, but if the variation were great enough the result as to spread and attack rate might approximate to this and the resulting epidemic might become world wide.

Similar arguments might be made for the other pandemics, and it is quite possible that all pandemics may be due to the occurrence of variants of one type of original virus. The argument is highly speculative but plausible. Proof could only be obtained from an intensive study of viruses from many epidemics and pandemics, and comparing the properties of viruses which are isolated from time to time and place to place. Some further light may come on this question from the work now in progress by my two colleagues on the antibody content of human serum against the human and porcine strains of virus, for the antibody content of a serum may be taken to indicate the past history of the donor and whether he has been exposed to a given infection or not. The future must decide whether the results prove valuable.

I have tried to indicate the lines of work and some of the results which emerge from the modern study of epidemic influenza, and to give grounds for my conviction that the primary infective agent in this disease is a filterable virus, and, further, to show that there is room for an adequate explanation of the pandemics as well as the epidemics under the virus theory.

in Porto Rico. "In its clinical course it appeared to be typical epidemic influenza though the mortality was low." Specimens of sputum from selected cases were sent to Dr. T. Francis, Jun., of the Rockefeller Hospital in New York. During the winter of 1933–34 Francis had tried, without any success, to infect ferrets by intranasal inoculation of material from a number of diseases, including examples of the "common cold" and two cases of clinical influenza. Three of the specimens from Porto Rico were inoculated intranasally into ferrets under ether anæsthesia. On the second day after inoculation each of these three ferrets developed fever. One of the ferrets was killed on the third day, and an emulsion of the nasal mucosa and the lungs was made. The emulsion was filtered through a Berkefeld V. candle, and it was found that the bacteria-free filtrate, when inoculated intranasally, induced disease in another ferret. After the sixth passage pneumonia always developed in ferrets which were inoculated under ether anæsthesia. From Francis's description of the disease in his ferrets, the course of the fever, the symptoms, and the post-mortem appearances, there was no doubt that he was dealing with a disease very similar to that described by us in 1933. One of Francis's laboratory attendants developed clinical influenza early in the course of these researches. From the attendant Francis recovered a virus with similar properties to those shown by the Porto Rico strain, though there appeared at first to be some differences. Francis also discovered, independently, that mice could be infected with the virus from ferrets and that a fatal pneumonia might ensue.

On the whole it seemed that the Porto Rico virus was more vicious than the English one, producing more extensive lesions in the lungs of ferrets and killing mice more rapidly. We were naturally thrilled when we learned of Francis's success with an epidemic in another part of the world, and we sent him a small supply of the specific antiserum prepared in a horse. Imagine with what impatience we awaited news of the result of his tests to determine whether the Porto Rico strain was really identical with our strain or whether it would prove to be different in some way.

The results of these tests have not yet been published, though they are expected to appear in the very near future. Dr. Francis has given me permission to state that the Porto Rico strain appears to him to be identical with ours and, *further*, that the strain he secured from the Philadelphia outbreak about January, 1935, is also of the same type. Dr. Francis has also generously sent specimens of these two viruses to us, and our results, so far, are in complete agreement with his.

SUMMARY

Summarising the results to date we may say that virus has been isolated on several occasions from epidemic influenza cases in man, capable of infecting ferrets and mice and producing characteristic diseases in both species. All strains of virus are neutralised by one specific antiserum. The virus is therefore one, and it has been obtained from cases in London 1933, London 1934, Shorncliffe 1935, London 1935, Porto Rico 1934, and Philadelphia 1935. The evidence is thus accumulating rapidly in favour of the virus hypothesis. In fact it appears to me already transformed into a theorem which in the future will be capable of demonstration.

We must not, however, lose sight of the fact that much remains to be explained; the sporadic cases are a difficulty, and the collection of cases at Woolwich from which we failed to recover virus remains mysterious. It may be that we are inclined to lay too great emphasis on the negative results following inoculation of ferrets with material from cases diagnosed as influenza. Failure to infect a ferret may merely mean that there was an inadequate concentration of virus in the material collected from the patient (the total amount of virus collected by washing a mucous membrane with saline is probably small), or that such virus as was present lacked aggressiveness for ferrets. To put it in another way, it may be that man is a much more sensitive test-object than a ferret for influenza virus. If this were so the clinical diagnosis might represent the truth more nearly than the ferret test we have used. We do not know.

Further, if there is only one influenza virus, it will not be easy to account for the periodic appearance of the great pandemics which have, from time to time, spread over the world. There are probably several factors concerned in the production of epidemics and pandemics, but of these the resistance or susceptibility of a population to infection must be very important. The passage of an epidemic leaves behind the more resistant of the population; some do not contract the disease because they are resistant from the outset, others contract the disease, recover, and are probably immune for a time. Repeated epidemics of one type should result in a resistant stock. If the human population has been repeatedly and frequently exposed to infection by this particular influenza virus, it is not easy to understand how a pandemic due to the same virus can develop.

Swine Influenza

Let us turn, however, to another set of observations which have a bearing upon our main problem, though at first sight they may appear to be of smaller importance. Consider the epizoötic disease known as "hog flu," or swine influenza. Swine influenza did not occur, or perhaps was unrecognised until 1918. Dr. J. S. Koen, then an inspector in the division of hog cholera control of the Bureau of Animal Industry in the United States of America, was greatly impressed, first, by the simultaneous prevalence of human influenza and the new disease of hogs, and, secondly, by the resemblance of the symptoms seen in man to those occurring at that time in pigs. He concluded that the two diseases were the same, and gave the name of "flu" to the new disease of hogs. Koen's view did not meet with general acceptance but the name was considered suitable, and the disease has persisted intermittently ever since. It is to-day a serious disease for the farmer who raises pigs on a large scale in the United States. Dorset, McBryde, and Niles (1922) record a typical but unusually severe outbreak in a herd of 102 young pigs.

> On Dec. 3rd the herd looked normal. On the 4th the farmer first noticed symptoms of sickness. "On Dec. 6th 11 had died and the entire remainder of the herd was so sick that they could be walked among and even kicked without forcing them to move." The severe state of illness remained practically unaltered until the sixth day of illness when there was a remarkable improvement, "almost all of the entire herd was up and eating." Full restoration of health and bodily condition was a slower matter. In this outbreak the mortality was about 10 per cent. It is usually about 2 per cent., though in very exceptional instances it may reach 25 per cent.

The symptoms of swine influenza are fever, when the temperature may reach 105° or 107° F., anorexia, profound prostration, apparent muscular weakness, thinks, if it were accompanied by proper supervision in the streets and suspect quarters to which prostitutes would shift when expelled from the public brothel. It would also be necessary to conduct a carefully organised campaign in favour of better morals.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

TOBACCO AMBLYOPIA

At last week's meeting of the Edinburgh Medico-Chirurgical Society Dr. H. M. Traquair read a paper based on his long experience of tobacco amblyopia. He pointed out that the ganglion cells of the retina or their fibres are extremely susceptible to the action of toxic substances. Some of these affect the peripheral cells, but the majority affect the central cells or fibres, and thus interfere with central vision. Most of the toxins which cause central visual defects also cause peripheral neuritis; but tobacco is an exception. Only the visual elements distal to the chiasma are susceptible, and it is probably the ganglion cells alone that are concerned in all types of toxic amblyopia.

Tobacco belongs to the group of poisons which affect the central nerve elements of the retina. The poison may be absorbed by smoking, chewing, snuffing, or eating tobacco, so that the toxic substance is not necessarily a distillation product. The smoking of a large number of cigarettes usually brings on gastric or cardiac symptoms before amblyopia develops; but if a pipe is smoked, or if the patient chews tobacco, amblyopia may be pronounced while other symptoms of tobacco poisoning are slight. An average of 84 cases of tobacco amblyopia are seen every year at Edinburgh Royal Infirmary, and these constitute 1 per cent. of all eye cases attending the out-patient department. In the past twenty-two years, 1856 cases have been seen in the Infirmary, of which all but 8 were in males. Most of the patients have been between 45 and 65 years of age, and the amount of tobacco consumed has varied from ½ oz. to 9 oz. a week, the average being just over 3 oz. The smallest quantity of cigarettes producing amblyopia was 70 a week.

The clinical diagnosis, Dr. Traquair said, can be made with certainty if proper methods of examination are used. The patient is usually between 50 and 60 years of age, and complains that he is unable to recognise the faces of his friends in the street, or that there is a mist between him and everything he looks at. He is surrounded by a peculiar heavy odour of stale tobacco which indicates the pipe-smoker. Vision may be depressed to 6/60, but may, to the black-and-white test card, be 6/6 to 6/18. The use of Bjerrum's test card which has grey letters on a grey background demonstrates the visual defect much more easily. Careful examination of the visual fields will always demonstrate a scotoma of a characteristic type, and when the vision of one eye is affected by tobacco amblyopia, Dr. Traquair has never failed to demonstrate a scotoma in the other. In all but the most advanced cases the prognosis is good if the patient stops smoking and leads a healthy life, but the amblyopia may continue to become worse for a few weeks or even months before improvement begins.

MONEY FOR EDINBURGH UNIVERSITY

At the half-yearly meeting of the general council of the University of Edinburgh held last week, it was reported that in recent months bequests and gifts made to the University have amounted to £169,000. Included in this sum are a bequest by Miss Alice Leslie Inglis of not less than £25,000 for the encouragement of research and teaching in the subject of child life and health; a gift of £15,000 by Mrs. Stuart Hall for a lectureship in the pathology of diseases of children; a bequest by Miss Grace Margaret Carmichael of about £9900 for the purpose of founding scholarships for the assistance of students; and a bequest by Prof. R. Ramsay Wright, of the University of Toronto, of £3500 for the establishment of a scholarship for the encouragement of research in zoology.

The Lewis Cameron fund is to be administered as follows: £3000 for the establishment of prizes for the best papers on subjects related to bacteriology or to the diagnosis of diseases; £15,000 for the endowment of a teaching fellowship in bacteriology; £15,000 to endow one of the existing lectureships of the department of bacteriology; £10,000 to form a fund for the expenses of research work in bacteriology and the diagnosis of diseases; £10,000 for a fund to provide the medical library with books and periodicals relating to bacteriology, and to the diagnosis of diseases. The remainder of the estate will be used to form the nucleus of a medical buildings extension fund.

M.D. EXAMINATION

The clinical examination for the degree of M.D. is still divided into a major and a minor part. It is, however, no longer necessary to profess a special subject, for both these sections can be taken in clinical medicine. The major part of the examination must be taken in clinical medicine unless the special subject professed is anatomy, physiology, pathology, bacteriology, pharmacology, forensic medicine, public health or midwifery, and gynæcology.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

EMERGENCY MEDICAL RELIEF

A SUFFICIENT experience of emergency medical relief under the provisions of Bulletin No. 7 Federal Emergency Relief Administration has now been obtained to justify an estimate of the success of this system of providing medical care for the indigent sick. It is at least obvious that some day a much more comprehensive plan will be needed. Neither relief administrators nor the medical profession are satisfied with the present provisions. There are two fundamental weaknesses which nobody can dispute: (1) that the distribution of the medical relief is in the hands of laymen; (2) that the funds available are totally inadequate to meet the need. The least unsatisfactory administration has been secured where local medical societies have accepted the budgetary insufficiency as an immutable fact or have taken over the responsibility of providing the administrative machinery. In these cases the doctors do a great deal of work for nothing, but as they are used to working for nothing can at least congratulate themselves on getting some subsidy, however small.

The inadequacy of funds leads to strange rulings. Thus no matter how urgent a person's need, or how completely devoid of resources, he may not be sent to a hospital at F.E.R.A. expense. Most States interpret the ruling to exclude payment of the doctor's fees if he attends a patient in a hospital.

Thus if a doctor wishes to collect a fee for appendectomy he must perform the operation on the kitchen table.

The treatment of syphilis would appear to be allowable on the ground that this disease interferes with earning capacity and also on the ground that it threatens life or health. But on the other hand it is frequently disallowed on the ground that it is a chronic disease. The Colorado relief administration has definitely ruled that "chronic conditions such as diabetes, tuberculosis, cancer, nephritis, venereal disease, epilepsy, &c., are not to be considered our responsibility." This in spite of the fact that Bulletin No. 7 does specifically provide for the treatment of chronic diseases. Furthermore, it appears to be the intention of the Federal administrator and the practice of the State administrators that no one may receive medical aid unless he is already on the list of those receiving material aid. Many a family may be able to buy enough groceries on their regular wage and still have nothing to spare when sickness visits them. These families it seems are not eligible for medical relief, even though the sickness be acute and dangerous. Your correspondent is advised that such probably would be the ruling though he has been unable to obtain any definite ruling from the Federal Emergency Relief Administration.

MEDICINE AND THE LAW

Refreshing the Memory

A LEGAL contemporary has recorded that in Smith *v.* Lowry (the claim against an osteopath summarised in this column on April 6th) a medical witness was allowed to refresh his memory as to the condition of a patient by referring to notes made by one of his pupils. Counsel on the other side objected. As it appeared that the witness had instructed the pupil to make the notes and had read the notes at the time, Mr. Justice Talbot overruled the objection.

A witness is ordinarily prevented from proving any fact by evidence of some previous statement made by himself outside the court. If, however, the statement is a written one, he can refresh his memory of facts formerly within his knowledge by looking at the document. The written statement need not have been made at the very moment of the transaction to which it relates; it is merely necessary that the note should have been made at a time when the witness's recollection of the facts was still clear and distinct. Witnesses have been allowed to refresh their memory by inspecting a note made within a week of the transaction, but not where the note was made six months afterwards. And, as in Smith *v.* Lowry, the note need not have been made in the witness's own handwriting, provided that it was made under his personal observation or was recognised by him as a correct record at a time when the facts were fresh in his mind. So the master of a ship, giving evidence of a voyage, may refresh his memory by reference to entries in the log-book made by the mate, or a tradesman may look at account-books kept by a clerk.

Expert witnesses are allowed to refresh their memory by referring to treatises which they habitually consult. This step does not make the treatise evidence in itself; the witness is obliged to give the result in his own words and on his own responsibility. In cross-examination, of course, an expert witness is often invited to refer to text-books in the hope that he will admit that he is wrong.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. A. de B. Joyce, H. H. Babington, and G. H. Hayes to *President* for Medical Dept., Admiralty.

Surg. Lt.-Comdrs. E. B. Pollard to *Galatea* and to *Pembroke* for R.M. Infirmary, Deal; J. J. Keevil to *Victory* for R.N.B., Portsmouth; D. C. Drake to *Drake* for R.N. Hospital, Plymouth; and J. L. Malone to *Arethusa.*

Surg. Lts. E. James to *Milford* on recommg., and W. J. M. Sadler to *President* for course.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. R. R. B. Roberts to *Victory.*

Surg. Lts. G. F. S. Parker to *Iron Duke*; R. D. Jenkins to *Victory*; and W. T. R. Chapman to *Durban.*

A. I. L. Maitland entered as Proby. Surg. Lt. and attached to List 1 of the Clyde Division (headquarters).

Proby. Surg. Sub-Lt. K. E. O. Ringdahl to *Renown.*

ARMY MEDICAL SERVICES

Col. H. H. J. Fawcett, D.S.O., h.p., late R.A.M.C., retires on ret. pay.

ROYAL ARMY MEDICAL CORPS

Short Service Commissions.—Lts. (on prob.) R. S. Vine, J. E. Jameson, R. H. Wheeler, and J. J. C. Rainsbury, are confirmed in their rank.

The undermentioned Capts. to be Majs. (Jan. 28th, 1935): J. N. Atkinson and J. D. Corner. (Substituted for notification in the *Gazette* of Feb. 8th, *vide* THE LANCET, Feb. 16th, 1935, p. 398.)

TERRITORIAL ARMY

Capt. F. R. Curtis resigns his commn.

Lt. W. R. Nash to be Capt.

R. W. D. Turner (late Cadet Serjt., Epsom Coll. Contgt., Jun. Div., O.T.C.) to be Lt.

H. W. E. Jones to be Lt.

B. L. McQuillan (late Offr. Cadet, Queen's Univ. Contgt., Belfast, Sen. Div., O.T.C.) to be Lt.

The Efficiency Decoration has been conferred upon Col. A. H. Gosse, Hon. Col. F. Marsh (R.A.M.C. units, 48th (S. Midland) Div.) (Bt. Col. ret. T.F.), and Lt.-Col. and Bt. Col. H. L. Garson.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. G. McLoughlin, from Active List, to be Capt.

ROYAL AIR FORCE

Flight Lts. R. E. Alderson to Central Medical Establishment, London., and R. E. W. Fisher, to Aircraft Depôt, Karachi, India.

INDIAN MEDICAL SERVICE

To be Capt. (on prob.): E. C. Hicks.

To be Lts. (on prob.): I. J. Franklen-Evans, J. Duffy, A. W. Sampey, J. Reidy, G. C. Welply, C. L. Greening, C. B. Jones, K. Cunningham, G. F. Adye-Curran (secd.), and J. F. A. Forster (secd.).

DEATHS IN THE SERVICES

Squadron Leader ROBERT BOOG WATSON, who died after a short illness at the West London Hospital on May 2nd, was born in Edinburgh on Christmas Day, 1893, the younger son of Charles V. Boog Watson, an engineer. He was educated at Merchiston School and in France and Germany, but owing to an accident in which he lost a foot he was unable to serve during the late war. He graduated M.B., Ch.B. Edin. in 1919, was house physician to Sir Robert Philip, and then house surgeon at the Royal Infirmary. He joined the medical branch of the Royal Air Force in June, 1920, took the D.P.H. in 1921, and was promoted squadron leader in June, 1930. He served twice in Iraq, and at the time of his death was assistant director (hygiene) at the Air Ministry. His early death is much to be regretted; he was a loyal and zealous officer of a type which can ill be spared. He leaves a widow and one daughter, with whom much sympathy is felt.

PUBLIC HEALTH

RESERVOIRS OF BOVINE TUBERCLE BACILLI: THEIR RELATION TO A SAFE MILK-SUPPLY

BY R. H. PARRY, M.D., M.R.C.P.
MEDICAL OFFICER OF HEALTH FOR THE CITY OF BRISTOL; PROFESSOR OF PREVENTIVE MEDICINE IN THE UNIVERSITY; AND

I. WALKER HALL, M.D.
DIRECTOR OF PREVENTIVE MEDICINE LABORATORIES AND EMERITUS PROFESSOR IN THE UNIVERSITY OF BRISTOL

ALTHOUGH the attainment of tubercle-free herds may appear to some to be a visionary hope, it must be admitted that there is cause for immediate dissatisfaction that the animal returns of laboratories do not point to a falling curve similar to that of human tuberculosis. The administration of the milk and dairies order and the tuberculosis sub-order by local authorities have not resulted in any tangible reduction in the output of tuberculous milk. The problem was, perhaps, too great to be tackled by local authorities on such lines. It is not surprising, therefore, that health authorities are turning to pasteurisation as a means of protecting the public from all the associated risks. Nevertheless, we should not thereby be diverted from the aim to free our herds from tubercle, or at all events, to make greater strides to that end.

While it is customary to express the milk tubercle problem in terms of varying numbers of infected cows or in percentages of tuberculous milks, there is another angle from which the question may be considered, namely, the numbers of infected farms that act as reservoirs for the dissemination of bovine strains.

For instance, during 1934 we found that 5·1 per cent. of 485 samples of milk from one area contained virulent tubercle bacilli. This conjured up the vision of some 23 cows with tuberculous udders. But when the sources of the milk were more closely scrutinised, it was evident that these animals were limited to 14 farms and that the milk therefrom was intermittently tuberculous over several months. Hence it was incumbent to envisage these sources as continuous, or recurrent foci, for the spread of tubercle bacilli via milk, utensils, workers, calves, and other animals in the same farm. In some definite instances it was possible to trace the infection by transfer of the cows to adjacent farms and markets. The potentialities for infection from each of the 14 centres assumed greater proportions than could be dealt with except by measures more systematic than those that to-day are considered to be satisfactory.

DELAY INVOLVED IN PRESENT PROCEDURE

What, in fact, are the actual procedures that at present may follow a report from a consuming centre that bulk milk from a specified source has been proved to contain virulent tubercle bacilli?

The county officials visit the herds concerned, examine the cows individually, condemn what they can upon inspection, and then probably take a few selected samples of milk for laboratory examination. By this means the infection may be cleared, but it is interesting to note how often clinical examination fails to reveal the source of infection even though there is evidence of the definite existence of such a source. Anyhow, the method as a whole usually takes many weeks for completion and during this time the milk remains infected. A few instances may be cited to demonstrate the existence and persistence of these bacillary reservoirs.

Farm A

Dec.	Bulk samples contain tubercle bacilli.
Jan.	Clinical examination of 11 cows. All healthy.
Feb.	Herd divided into groups. Two groups of 3 and 4 cows yield T.B. milk.
Mar.	Two of above 7 had gone dry. Of the other 5, one yielded T.B. milk.

Farm B

June.	Bulk milk from 45 cows contained T.B.
July.	Vet. selected 7 cows for sampling. One milk yielded T.B.
Aug.	Bulk samples yielded T.B. All cows grouped. One group = T.B. milk. Two cows of group found to give T.B. milk.

Farm C

April.	Bulk milk = T.B.
May.	Vet. took sample from selected cow = negative.
Aug.	Bulk milk = T.B.
Sept.	Herd sampled in groups. One cow gave T.B. milk.
Oct.	Herd sold by auction before definite clearing samples could be taken.

Farm D

April.	Bulk milk = T.B. ÷. Vet. selected 4 samples. All were negative.
July.	Bulk milk = T.B. ÷. Vet. selected 4 samples. All were negative.
Sept.	Bulk milk still tuberculous.

Farm E

July.	Bulk milk	= T.B. ÷.
Aug.	,, ,,	= T.B. ÷.
Sept.	,, ,,	= T.B. not found.
Oct.	,, ,,	= T.B. ÷.
Nov.	,, ,,	= T.B. not found.
Dec.	,, ,,	= T.B. ÷.

These results may be summarised thus:

Length of time tuberculous milk was supplied before clearance

Farm A	4 months.	Farm D	6† months.
,, B	3 ,,	,, E	6† ,,
,, C	6* ,,		

* Herd distributed before clearance.
† Still tuberculous.

These records may suffice to support a contention that a more comprehensive and combined attack is necessary for the effective eradication of rural foci of tuberculous material. For many months these herds were excreting tubercle bacilli intermittently, or tuberculous animals were being introduced into the herd at frequent intervals, and the infected milk was being distributed. At once, however, when alterations in procedure are suggested, questions of finance introduce apparent difficulties. These, in this matter, are the children of the myopic economist. It is easy to understand the restricting hand of county and civic authorities, for the problem is essentially national. It is less easy to appreciate the lack of prominence attached to the point that, while the producer suffers a small loss when a tuberculous animal is destroyed, this loss is as nothing to the retention of a tuberculous cow in an otherwise healthy herd. The inevitable spread of tubercle bacilli gradually reduces the value of each of the others, and the frankly tuberculous one soon becomes the price of skin and bone. It is not perhaps within the scope of this article to discuss the part played by compensation in this matter. Can the lot of the dairy farmer be classed among the speculation trades, wherein good margins of profit compensate for heavy risks? If not, compensation on a liberal scale must be considered. Surely we have progressed sufficiently to-day to be convinced that the supply of fresh, clean, safe milk at a reasonable cost is a national need to be met by national provision. At all events, it is clearly evident that the present-day methods are inadequate and uneconomical.

SUGGESTED LINES OF ACTION

Apart from the wastage of hardly won food and the costs of damaged health, the score of economy alone is an urge towards the limitation of a persisting spread of tubercle bacilli from known sources of infection. It is permissible therefore to suggest some lines of action that might lead to more effective protection of the industry and community.

1. That when a milk-supply is proved to be tuberculous, neither removal from nor access of animals to that herd should be allowed without a certificate from the district veterinary official.
2. That at the outset of inspection, the milk from each member of the herd should be sampled. That there should be a close coöperation, consultative and operative, between the veterinary officials and available laboratories, in order to determine what further inspections and samplings are necessary.
3. That until the joint examinations indicate the absence of tuberculosis in the herd all the milk produced should be compulsorily pasteurised.
4. That during this period of probation all calves should be carefully supervised and protected. That efficient cleansing and disinfecting of the premises should be carried out at prescribed intervals and that the manure should be treated so as to destroy pathogenic organisms.

While these suggestions may appear more cumbersome on the one hand, and less radical on the other, than tuberculin testing, yet their application should be less disturbing to economic conditions and so meet an objection that is frequently advanced against routine tuberculin reactions.

We have not attempted here to deal with the problems associated with the tracing of infected milks to their particular source. Bulk sampling is a practical proposition in Bristol. It is not so in large cities where milk has been transported in glass-lined tanks containing as much as 3000 gallons of milk, a procedure that aggravates the situation in regard to the dissemination of disease.

It would have been a passing achievement if we could have pointed to the effective clearance of 14 reservoirs of infection in one area. Such it seems is not a possibility under existing conditions. Perhaps, however, our citation of these records may induce other centres to review their own from a similar standpoint. If their observations confirm our findings, they would constitute a tacit submission for an early reconsideration of existing procedures. At the same time they would bring before all those associated with its production the necessity of convincing the consumer that they are unwearying in their aims to provide a consistently safe and clean milk. The success of "milk campaigns" depends largely on such a satisfaction. But in any case one of the essential features of an extended programme for betterment should be an active coöperation between field and laboratory and the arming of both with sufficiently effective financial and controlling powers.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 27TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1994; diphtheria, 996; enteric fever, 16; acute pneumonia (primary or influenzal), 1445; puerperal fever, 47; puerperal pyrexia, 124; cerebro-spinal fever, 23; acute poliomyelitis, 1; encephalitis lethargica, 9; dysentery, 7; ophthalmia neonatorum, 84. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 4th was 3459, which included: Scarlet fever, 1035; diphther [illegible] whooping-cough, 365; puerperal feve [illegible] encephalitis lethargica, 269; [illegible] Hospital there were 18 babies [illegible] neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 25 (0) from measles, 5 (0) from scarlet fever, 36 (4) from whooping-cough, 32 (10) from diphtheria, 51 (13) from diarrhœa and enteritis under two years, and 137 (15) from influenza. The figures in parentheses are for London itself.

There is a sharp fall in the number of influenzal deaths which are now chiefly concentrated in the northern area. This week deaths were reported from 52 [illegible] orting 22, Leeds 16, Middlesbrough [illegible] town more than 3. Hastings and [illegible] fatal case of enteric fever. Six deaths from measles occurred at Wigan, 5 at Birmingham. Whooping-cough was credited with 5 deaths at Middlesbrough. In no great town were more than 2 fatal cases of diphtheria reported.

The number of stillbirths notified during the week was 290 (corresponding to a rate of 42 per 1000 total births), including 53 in London.

PANEL AND CONTRACT PRACTICE

Unemployment and Medical Benefit

THE most difficult problem in national health insurance at the present time is the effect of unemployment on the scheme. The reduction of income and the increased expenditure on benefits, whether direct or indirect, form a vicious circle which ever since the first attack of post-war depression which began in 1920 has required palliative treatment in the shape of a series of Prolongation of Insurance Acts. In 1928 an attempt was made to put the matter on a permanent basis, but it was soon apparent that the attempt had not solved the problem, and after further Prolongation Acts in 1930 and 1931, the new Act of 1932 dealt with the situation up to the end of 1935 by prolongation of insurance and partial excusal of arrears. Insurance practitioners, particularly those in the depressed areas, have already appreciated some of the effects of this Act in respect of those unemployed insured persons whose title to medical benefit ceased after Dec. 31st, 1933. But an even more serious situation is due to arise at the end of this year when these people expect to lose their contributory pension rights as well. The health and pensions provisions of our scheme of social insurance are so interlocked that it is not always appreciated that there is an essential difference between them. Broadly speaking, the health provisions may be likened to fire insurance where the risk is a potential day-to-day risk, but pensions are more akin to an endowment assurance where the contributions or premiums are to provide for a future claim at age 65, or in respect of the contributor's widow or orphan.

The National Conference of Friendly Societies have had under consideration a scheme for continuing medical benefit to unemployed persons who have been insured for ten years and have paid not less than 400 contributions, so long as they can prove their availability for, but inability to obtain, insurable employment, and the beneficiaries under the scheme would thereby retain their title to pension rights and to certain health insurance benefits. The proposal is that the charge in respect of medical benefit against insurance funds should be a collective responsibility of the National Health Insurance

Fund as a whole and that, in allocating this cost against the approved societies, no regard should be had to the financial positions of the various societies. The foregoing scheme has, however, been adversely criticised, as it is thought not to go to the root of the matter. Various groups of approved societies have given intensive consideration to the question, and it would appear that there is now a certain degree of agreement that arrears might be disposed of by a charge on each society's contribution income, each society in its turn to receive back out of the fund thus created its own measure of relief calculated upon the extent of unemployment amongst its members. This plan would make the unemployment risk a common charge on all types of societies which would vary as the unemployment figures varied. It has been stated that the charge at the present time would represent substantially less than one penny per contribution actually received by societies.

But the scheme, statesmanlike though it is, may have an adverse effect upon additional benefits, dental, ophthalmic, and the like, and so it is not surprising that some voices are already asking as to the possibility of securing a Government grant. This is, however, a matter of politics on which the medical profession as such has no voice, although they may observe with gratification that attempts are being made to preserve not only medical benefit but the other benefits of health and pensions insurance for those who have fallen on hard times owing to continued unemployment. Two groups of societies have recently expressed their readiness to join in providing substantial financial assistance to the 5,000,000 insured persons who are in arrear, due to unemployment, in order that their right to statutory benefits, medical and other, may not be jeopardised.

Supply of Anti-diphtheria Remedies

Some months ago a medical service subcommittee dealt with a case in which an insurance practitioner treated a young dressmaker as a private patient and rendered an account for £6 7*s*. 6*d*. for the period Oct. 30th to Nov. 2nd, but of this amount £4 19*s*. 6*d*. represented his charge for diphtheria antitoxin. There was a conflict of testimony as to when the practitioner was first asked to treat the girl as an insured person. At the hearing the practitioner, who was under the impression that his secretary had paid the local authority for the antitoxin, expressed his willingness to withdraw the account. It was it seems the practice of the local authority in question to supply the antitoxin gratuitously for use in necessitous cases. Under Clause 9 (8) of the Terms of Service a practitioner is required to supply to a patient such drugs and appliances as are required for immediate administration or application, and he may supply any other drug which is administered by him in person. But reference to the appendix to the distribution scheme will show that serums can be paid for only when supplied to patients for whom a supply is not made gratuitously available by any public authority. So far as diphtheria antitoxin is concerned the reason for the proviso is that the Diphtheria Antitoxin Order of August 15th, 1910, is not mandatory but discretionary, and it is for the local authority to decide whether a supply of diphtheria antitoxin shall be made gratuitously available, and to interpret the term "poorer inhabitants." Some authorities supply antitoxin gratuitously to all persons requiring it.

An inquiry was recently addressed to the Ministry of Health as to whether diphtheria prophylactic and the material for the Schick test may be regarded as drugs when required in connexion with the immunisation of insured persons. The reply was that while the Minister has no authority to give a ruling—the question can be authoritatively decided only in the manner furnished by the regulations—he is of opinion :—

(*a*) That diphtheria prophylactic is a drug, the cost of which would form a proper charge on the chemists' fund when ordered on the official prescription form in respect of a "prescribing" patient.

(*b*) That preparations which are used for application to the human body for diagnostic purposes must be regarded as properly chargeable to the chemists' fund in the case of "prescribing" patients or the practitioners' drugs account in the case of "dispensing" patients.

An Uncommon Representation

Under Article 44 of the Medical Benefit Regulations the local medical or panel committee have power to consider any complaint made to them by one insurance practitioner against another involving the efficiency of the medical service, and the committee may make representations to the Minister that the continuance on the medical list of the practitioner against whom complaint is made would be prejudicial to the service. The power thus conferred is very seldom exercised to the extent of suggesting the removal of a practitioner's name. Quite recently Dr. A made complaint that an insured person on his list had been transferred to Dr. B's list without the patient's knowledge or consent. The patient's wife was being attended by Dr. B, who on her second visit to him asked her to produce her husband's medical card the next time she called. It seems that he kept the card and told the woman that when she received the card back with a transfer form attached she should take the medical card again to him. According to her own statement the woman followed these instructions and some time afterwards when in hospital her husband came to visit her, bringing with him a new medical card with the name of Dr. B on it. Dr. B admitted that the letter to the insurance committee applying for consent to transfer at the end of the quarter, which purported to be from the insured person, was written and signed by his housekeeper upon his instructions. He had never seen the insured person, but took the action he did at the wish of the patient's wife. The subcommittee were not disposed to accept his assertion that the wife was anxious for the transfer, and passed a resolution expressing their opinion that his continuance on the medical list would be prejudicial to the efficiency of the medical service of insured persons. The Minister will now appoint a day for the holding of an inquiry. Whatever may be the outcome of this particular case, it is evidently most undesirable for a practitioner to act as the agent of an insured person in the matter of applying for consents to transfer. Practitioners accepting transfers should insist that the application on the medical card or on Part A 1 (the red printed slip) should be fully completed and signed by the insured person concerned. It should be added that it is 13 years since such an inquiry was held at the instance of the London panel committee.

BIRKENHEAD GENERAL HOSPITAL.—During the last eight years no beds have been added to this hospital and the wards are crowded. The pressure is greatest in the women's wards, and many patients are waiting for admission. A few rooms are set aside for paying patients, but the demand has grown from 15 in 1926 to 166 last year, and more provision must be made for such cases.

OBITUARY

JAMES PRAIN STURROCK, M.D. Edin.

THE death occurred on April 24th, at Inverness, of Dr. James Prain Sturrock, a commissioner of the General Board of Control of Scotland. Already a graduate in arts at the university of St. Andrews before turning to medicine, he received his medical education in Edinburgh, graduating as M.B., C.M. in 1897. Ten years later he proceeded to the M.D. degree, which he obtained with honours. The whole of his professional life was spent in institutional or official connexion with the treatment of mental disease. First appointed as senior assistant medical officer in the Stirling District Asylum at Larbert, he became assistant medical officer at the Midlothian and Peebles Asylum and later medical officer to the Perth Prison and State Inebriate Reformatory, being also superintendent of the criminal lunatic department. He was appointed a deputy commissioner of the General Board of Scotland in 1914, and became in 1922 full commissioner. His literary output was considerable and useful, dealing with the relations of mentality to crime, with the influence of inebriety upon those relations, and especially the connexion between feeblemindedness and inebriety. He published in the *Journal of Mental Science*, 1910, arising out of his experiences at Perth, a paper on certain insane conditions to be found among the criminal classes. He wrote on the modern aspects of eugenics in the transactions of the Perth Natural Science Society and followed that with an essay on inebriety and feeblemindedness in the *British Journal of Inebriety* for 1912. These essays were characterised by their practical directions, and were founded upon much and close personal observation.

Dr. Sturrock, whose death occurred suddenly from cerebral hæmorrhage, while conducting an official inspection, leaves a wife and daughter.

DR. AXEL REYN

LATE DIRECTOR OF THE FINSEN LIGHT INSTITUTE, COPENHAGEN

Dr. Axel Reyn, who died at the age of 63 on April 22nd, was, through his work in connexion with, and as successor to, the late Prof. Niels Finsen, widely known in the medical world. He became associated with Finsen in 1897 and was later appointed chief of the dermatological department of the Finsen Institute. He made a well-deserved reputation as a dermatologist and will be remembered for his work in actinotherapy in relation to tuberculosis and especially in the local and general treatment of lupus vulgaris. His knowledge of this disease was profound and his skill in its treatment was widely recognised. Sufferers from lupus flocked to the Finsen Light Institute from all parts of the world, and many will ever have reason to recall with gratitude the success with which they were treated. He devised the Finsen-Reyn lamp, a modification of the original Finsen lamp, which is especially useful for the treatment of individual cases, and has been introduced into hospitals and clinics the world over, where it is still successfully employed. He introduced carbon arc baths for the general light treatment of surgical tuberculosis, and with N. P. Ernst published his method in 1914. In 1913 he published "Die Finsenbehandlung," an important work wherein was collected all existing available knowledge of light therapy, and he wrote numerous valuable papers dealing with lupus vulgaris, and the treatment of X ray burns and ulcers, and of tuberculosis of the glands. Honours came to him plentifully, and he was elected honorary member of many learned societies both in Denmark and abroad. Perhaps the honour he most greatly appreciated was his election as President of the International Light Congress held in Copenhagen in 1932 where glowing and well-merited tributes were paid him by colleagues from many countries, and a special number of *Strahlentherapie* was published in his honour. But already the disease, tuberculosis, which eventually killed him, had attacked him severely, and he resigned the directorship of the Finsen Institute in 1933, being elected president of the board. His successor at the Institute is Dr. Sven Lomholt.

Sir Henry Gauvain, to whom and to Dr. A. E. Kissmeyer, Reyn's friend and colleague, we are indebted for much of this information, writes: "For those who were privileged to know him the death of Axel Reyn creates a great sense of personal loss. His was a modest, lovable personality, generous, always ready to help colleagues, and devoted to the interests of his patients. He was a man of deep culture and wide interests, fond of travelling and particularly of the Mediterranean coast. Of recent years he was in the habit of spending the spring on the Riviera and this year had only returned to Copenhagen three weeks before his death. He married in 1893 Elizabeth Finsen, sister of Niels Finsen; she survives him, but they had no children. Reyn was particularly interested in the promotion of preventive measures against tuberculosis and debilitating diseases in children, and the success which attended his efforts in these directions proves the necessity of their application."

THE LATE GORDON ERNEST ODDIN-TAYLOR, M.R.C.S. Eng.—A South African correspondent sends the following notes upon the career of Dr. Oddin-Taylor, who died recently in Pietermaritzburg, where he was senior surgeon to Grey's Hospital at the time of his death, which followed a serious operation. "Dr. Oddin-Taylor was a member of a well-known Norfolk family and received his medical education at St. Thomas's Hospital, where he qualified with the English double diploma in 1896. He went out to join relatives who were practising in Pietermaritzburg, and for 30 years practised in that town. He was appointed surgeon to Grey's Hospital in 1907, thus serving the institution for the exceptionally long period of 28 years. He had been a member of the old Natal Medical Council and for a long period represented the Natal Inland Branch on the Federal Council. He was held in high esteem by the medical and nursing profession for his skill as a surgeon, and was certainly one of the best known figures in the Natal capital."

MIDDLESEX HOSPITAL.—The Duke of Northumberland has been elected president of this hospital, an office that since the first few years of the hospital's existence has been held by the head of the house of Percy. On the death of the last president the present duke was still a minor, but he has now agreed to continue the tradition of close on 200 years.

HOSPITAL FINANCE AT TAUNTON.—There are now 18,566 contributors to the Taunton and Somerset hospital week's committee scheme, over a thousand more than last year, and the total receipts for the year amount to over £10,000.

infectious diseases by the bacterial toxins I induced artificially by intramuscular injections of milk (5–10 c.cm.) or of bacterial proteins such as Omnadin or Stormin (Austrian Serum Works). This immunising stimulus, combined with the osmotic stimulus of the dextrose proved sufficient to abort the attack in about 70 per cent. of the cases of lobar pneumonia, typhoid, erysipelas, and Bang's fever. Whenever possible we administer early in pneumonia and before the fifteenth day in typhoid a dose of albumin intramuscularly, and 20 hours later 20 c.cm. of 50 per cent. dextrose solution with 0·25 mg. strych. nitr. intravenously. In pneumonia fever and pain disappear by the fourth or fifth day after the beginning of this treatment. In typhoid the swelling of the spleen and the abdominal symptoms yield as a rule within four days, the patient becoming afebrile by the sixth day. I have published temperature curves of such cases (Wien. med. Woch., 1931, lxxxi., 254) and Dr. Reinthaller has recently recorded his observations on 160 cases of pneumonia at the St. Pöltner Hospital (Ars Medici, 1934, p. 512). He confirms the quick and sometimes astonishing effect. Pneumonia of the epidemic kind commonly known as influenza (Grippe) reacts less or not at all. Of 90 typhoid cases in my private practice and in hospital I lost only two, one from hyperpyrexia (? after insolation), the other after operation for a wrongly supposed perforation. In the longer cases it was necessary to inject osmon two or three times. Since there is no actual shock this treatment can be carried out at the patient's home if nursing is available.

I am, Sir, yours faithfully,

KARL STEJSKAL.

Spital der Barmherzigen Brüder, Vienna, May 3rd.

NASAL RECONSTRUCTION: THE TUBED PEDICLE FLAP

To the Editor of THE LANCET

SIR,—In reply to Dr. Aymard, I have nothing to add to what you published in the correspondence columns of THE LANCET in August, 1920, in reply to a similar claim by him; *except* to draw his attention to my recent publication re the tubed pedicle in *Surgery, Gynæcology and Obstetrics* in which priority of publication of this flap is given to Filatoff. With regard to the stirrup flap mentioned by Dr. Aymard, I would refer him to Tripier's operation published in the *Revue de Chirurgie*, No. 4, 1890.

I am, Sir, yours faithfully,

Harley-street, W., May 3rd. H. D. GILLIES.

MATERNAL MORTALITY

To the Editor of THE LANCET

SIR,—Mr. Eardley Holland's address to the Royal Sanitary Institute published in your issue of April 27th is most valuable. It is a long time since—in the middle 'seventies—I studied midwifery in Edinburgh under Matthews Duncan who impressed upon us that "festina lente" was to be our guiding motto when attending an expectant mother. For more than 30 years I had a country practice with an average of one confinement a week, 50 miles away from a hospital, and not within easy reach of a medical friend. For some years there were no nurses—only friendly neighbours too eager to be of help, who never learned to understand why I wished my patient not to bear down in the early stage. In tedious cases I was often urged by relatives to use instruments and bring the delivery to an end. This I always resisted, and I gave no chloroform until the second stage was well advanced, stating that if given earlier the pains were weakened and the labour prolonged. There was often great difficulty in making the patient and friends believe this. In using forceps I felt I was acting more safely if my patient was fully conscious, for she would easily show when they hurt her, however gently they were applied. After they were in position she got more chloroform, though in very small amounts. I am therefore in accord with Mr. Eardley Holland on all these points. Nature does the work best, and is much to be preferred to instrumental aid with its risk of injuries to the soft parts. In a busy practice one is often tempted to bring the case to an end, but the question should always be what is best for the patient.

I am, Sir, yours faithfully,

Harrogate, May 6th. JAMES G. MACASKIE.

SUPPLEMENTS TO THE DIET OF CHILDREN

To the Editor of THE LANCET

SIR,—The report recently published by Mr. T. W. Simpson and Mr. Eric C. Wood on the value of supplements to the ordinary mixed diet of children, which is annotated in THE LANCET, May 4th, shows clearly that such mixed diet is deficient at any rate in those factors which make for increased growth. The authors' other conclusions cannot however be accepted without criticism. In the first place, they use as a criterion the weight increase *during* the six weeks during which each supplement is being given. Since growth-factors, whatever their chemical nature, continue to exert their influence for varying periods after they are withdrawn from the diet, it is doubtful if the precaution of giving the different diets in rotation for periods as short as six weeks balances this error. A state of nutrition, as Dr. Magee has recently emphasised, is dynamic, not static, and sufficient time must be allowed for each factor to exert its influence after the effects of the previous one have worn off.

In the second place, the authors conclude that because a "calorie" supplement (vitamin content unstated and unknown) produced better growth than either cod-liver oil or halibut-liver oil and milk, that "balanced calories" are of greater benefit to the child than "vitamins." Since two of the supplements supplied only vitamins A and D, and the third, containing malt, egg, and lemon juice, presumably contained small quantities of the B complex and C in addition, such a sweeping conclusion scarcely seems justified. Vitamins do not fall into a chemical group, and it is as unreasonable to speak of "vitamins" meaning A and D as, for example, of "minerals" meaning only calcium and phosphorus and disregarding iron.

The impression cannot be avoided that different results might have been obtained had the growth factors of the B complex been considered in addition to vitamins A and D.

I am, Sir, yours faithfully,

Wembley Park, Middlesex, May 7th. M. D. WRIGHT.

PUTNEY HOSPITAL.—Princess Arthur of Connaught visited this hospital last week and opened the new nurses' home. Extensions at the hospital have cost £30,000, and there is still a debt of £8000.

OSWESTRY COTTAGE HOSPITAL.—A new cottage hospital is required at Oswestry, and a scheme has been launched for building it at a cost of £20,000. An effort is being made to raise a 10,000 shilling fund.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Osteopaths Bill: Select Committee's Report

The meeting of the Select Committee of the House of Lords on the Registration and Regulation of Osteopaths Bill, which had been arranged for Thursday, May 11th, has been postponed sine die on account of the illness of the chairman, Lord Amulree. The Committee will meet again at a later date to consider their report.

Ribbon Development

In the House of Lords on Tuesday, May 7th, the Marquess of Londonderry introduced the Restriction on Ribbon Development Bill. The object of the Bill is to provide for the imposition of restrictions upon ribbon development along frontages to roads; to enable highway authorities to acquire land for the construction and improvement of roads; to preserve the amenities or control development in the neighbourhood of roads; to extend the powers of local authorities as to the provision of accommodation for the parking of vehicles and as to the prevention of interference with traffic; and for purposes connected with the matters aforesaid.

The Bill was read a first time.

HOUSE OF COMMONS

WEDNESDAY, MAY 1ST

The New Driving Test

Mr. Parkinson asked the Minister of Transport the number of persons, male and female, that had been examined for the new driving test; and the number that had failed to satisfy the examiners.—Mr. Hore-Belisha replied: Up to and including April 27th, 22,539 persons have been examined, of whom 1863 have failed to satisfy the examiners. The periodical returns furnished by the examiners do not distinguish between male and female applicants.

Mr. West: Do these figures convince the Minister that there must be an enormous proportion of motorists to-day who are unfit to drive?

Mr. Hore Belisha: It is the purpose of the test to prevent, at any rate to some degree, bad drivers from getting on to the roads.

Mr. Tinker: Have those who fail another opportunity to undergo a test?

Mr. Hore-Belisha: Yes, they can certainly submit themselves for a test again after the lapse of the statutory period.

Hospitals and Road Casualties

Mr. Leonard asked the Minister of Transport the total cost incurred by hospitals in Great Britain in treating road casualties; the amount claimed from his department by these institutions; and the total paid.—Mr. Hore-Belisha replied: According to a statement in "The Hospitals Year Book, 1935," 25,000 victims of road accidents were treated last year in the voluntary hospitals of Great Britain and Ireland at a cost of £235,000, of which £110,000 was recovered, including £80,000 under the provisions of the Road Traffic Acts and the common law. Payments to hospitals in respect of the cost of such treatment, although they may be made in pursuance of the Road Traffic Act, are not made from funds under my control.

National Health Insurance Funds

Mr. Gordon Macdonald asked the Minister of Health the total amount of the National Health Insurance funds at Dec. 31st, 1934.—Mr. Shakespeare (Parliamentary Secretary to the Ministry of Health) replied: The amount was approximately £129,500,000.

Mr. Macdonald: Does the Minister not consider it advisable that some of this amount should be used to safeguard the interests of those who are suffering from the effects of prolonged unemployment?

Mr. Shakespeare: The whole question of unemployment in relation to health insurance is being considered now.

Mr. T. Smith: Can the Minister say when the promised amending Bill will be introduced?

Mr. Shakespeare: As soon as possible.

Miners' Baths and Welfare Institutes

Mr. Lunn asked the Minister of Labour if a caretaker of a miners' welfare institute or miners' baths was treated as entitled to unemployment insurance benefit in case of unemployment; and whether such cases had been considered by the statutory committee and a recommendation made thereon.—Mr. R. S. Hudson (Parliamentary Secretary to the Ministry of Labour) replied: Broadly speaking, persons engaged in looking after miners' welfare institutes or miners' baths are regarded, in accordance with judgments given by the High Court, as being employed in domestic service and, therefore, not insurable where they are not employed in a business carried on for the purposes of gain. Both these employments, however, are among those with regard to which inquiries are proceeding with a view to the submission of a draft regulation to the Statutory Committee under Section 2 of last year's Act for the inclusion within the scope of the scheme of certain workers now excepted.

Rural Telephones in Scotland

Sir Archibald Sinclair asked the Postmaster-General in how many cases in the last three years guarantees had been demanded by the Post Office as a condition of extending the telephone in rural districts in Scotland; what was the total amount of such guarantees; in how many cases recourse had been had to the guarantors to make up any deficiency on the cost of the service; and what was the total amount of money paid to the General Post Office in respect of these guarantees.—Sir Kingsley Wood replied: During the past three years guarantees have been required in Scotland in 27 cases, all in connexion with the provision of telephone call offices in rural districts. The total amount guaranteed is £594 10*s.* a year. Nine of the call offices have not yet been in service for a year; but it has been necessary to make demands upon the guarantors in respect of all but one of the remaining 18. These demands number 29 in the period stated; and the total amount paid or awaiting payment is £568 14*s.* 10*d.* As a result of the concession which I announced on April 29th concerning the provision of additional telephone facilities in rural districts, the guarantees in nearly half these cases will be cancelled as from May 1st.

THURSDAY, MAY 2ND

Lifts and Factory Act Control

Mr. Rhys Davies asked the Home Secretary if he had considered the question of bringing lifts at residential and office premises under the Factory Acts.—Captain Crookshank (Under-Secretary, Home Office) replied: This suggestion has not been overlooked, but my right hon. friend is not in a position at present to come to any conclusion.

New Water-supply Schemes

Mr. Levy asked the Minister of Health how much of the Treasury provision for grants in aid of water-supply schemes had been expended; and what was the total expenditure on new water-supply schemes since this provision was made.—Sir Hilton Young replied: The amount of grant provisionally allocated is now £528,000 in respect of schemes of a total capital cost of £3,320,000. It is not possible to state the total expenditure on water-supply schemes since the Act providing the grant was passed in March, 1934, but during this period the loans for such schemes sanctioned by me or by Parliament in local Acts amount to £4,370,000, including £1,400,000 for rural water schemes.

Mr. Levy: In view of the warning already given by water undertakers, including the Metropolitan Water Board, as to the water shortage this summer, is the right hon. gentleman really satisfied that he is doing all that can be done to alleviate a water shortage and its consequences ?

Sir Hilton Young : My reply to that question is a suggestion that there is no apprehension of a water shortage this summer.

Expenditure on Social Services

Mr. West asked the Chancellor of the Exchequer the total net expenditure in 1934 on social services, excepting sums spent on war pensions.—Mr. Chamberlain replied : I am afraid that the information asked for is not yet available. As the hon. Member is no doubt aware, full details of expenditure on social services are given in the Return of Public Social Services published each year. The latest issue of the Return (Command Paper 4749 of 1934) contains the figures for 1933, and those for 1934 will be included in the next issue which will be published in the autumn.

Mr. West : Is it not a monstrous thing that the figure of £500,000,000, so often quoted in this House, is grossly misleading, and is it not the fact that the increase in social services during the last few years has been largely offset by the increasing taxation borne by the people indirectly ?

Mr. Chamberlain : I cannot answer that question without notice.

Lieut.-Commander Agnew : Is it not a fact that we spend each year more than any country in the world on social services and that we get the best results ?

Mr. G. Griffiths : Is it not the fact that there is more stopped out of the wages of the working-class in this country than is the case in any other country ?

No further answers were given.

Hospitals and Milk-supplies

Mr. Leonard asked the Minister of Agriculture if his attention had been called to the fact that, owing to the regulations of the Milk Marketing Boards, some hospitals had had the price of milk raised against them from 33 per cent. to 63 per cent. ; and to what extent the matter was being considered, so as to assure no limitation of milk consumption in such institutions and no substitution of inferior grades.

Sir John Haslam asked the Minister of Agriculture what was the reason why hospitals could not purchase the milk they required for their own use at about the same wholesale price as they did before the existence of the Milk Marketing Board.—Mr. Elliot replied : As regards the prices payable by hospitals for milk supplied under the Scottish Milk Marketing Scheme, 1933, which were considered by the Committee of Investigation for Scotland, I would refer Mr. Leonard to the reply given on April 8th by the Secretary of State for Scotland. The position in England and Wales is that the Milk Marketing Board have prescribed a form of contract under which hospitals contracting with producers can obtain supplies at the wholesale price with small additional premiums for level deliveries or other special services. Hospitals not contracting with producers may obtain supplies from wholesalers under the resale clauses of the ordinary contract at the wholesale price plus premiums varying from ½*d.* per gallon for large quantities to 1½*d.* per gallon for small quantities. From particulars furnished by the British Hospitals Association, it appears that as regards approximately two-thirds of the voluntary hospitals in England and Wales the price paid for milk during 1934 was, on the average, about 15 per cent. more than in the year preceding the scheme, but that in individual cases the increase was 33 per cent. and in one instance 63 per cent. I understand that the Association have discussed the matter with the Milk Marketing Board, and that after very careful consideration the Board have not been able to see their way to authorise the sale of milk to hospitals at less than the rates laid down, but they have suggested that if the Association can obtain the concurrence of the Central Milk Distributive Committee (as representing the distributive trade) to the supply at net wholesale prices they will give sympathetic consideration to a variation of the terms of sale accordingly.

Sir John Haslam asked the Minister of Agriculture, if, in view of the indignation that existed amongst hospital authorities at the high prices they had to pay for their milk-supplies compared with the low prices paid by chocolate and cheese makers, he would take steps to obviate this differentiation.—Mr. Elliot replied : My hon. friend will appreciate that the effect of replacing purchases of milk at liquid rates by purchases at the manufacturing prices is to increase the loss already occasioned to milk producers by reason of these prices. I am not quite sure what steps my hon. friend has in mind to meet this difficulty, but I should be glad to consider any proposals he suggests.

Venereal Diseases

Sir Arnold Wilson asked the Minister of Health whether his attention had been drawn to the fact that the death-rate from syphilis for 1933 was higher than for 1924, and the total number of reported new cases of venereal disease higher in 1933 than in 1925 or in 1932; and whether he would now consider the need for legislation to require compulsory notification and segregation of cases of these infectious and disabling diseases on lines similar to those in force under the Infectious Disease (Notification) Extension Act, 1899.—Sir Hilton Young replied : With regard to the first part of the question, the crude death-rate from syphilis per million persons living was the same in 1933 as in 1924, but the standardised rates show a decline. The numbers of new cases attending the treatment centres provided for venereal diseases show an increase over the years mentioned for all forms of venereal disease, but a decline for syphilis. These figures, however, do not necessarily reflect the actual incidence of the disease. With regard to the second part, I see no reason for disagreeing with the Committee of Inquiry of 1923 which came to the conclusion that compulsory measures on the lines suggested were not desirable in the case of these diseases.

Sir A. Wilson : Is the Minister aware that Great Britain is practically the only large country in Europe where the rates have not shown a very substantial decline ?

Sir Francis Fremantle : Does my right hon. friend also realise that Great Britain is the one country where vital statistics are the most real and extensive ?

No further answer was given.

Maternal Mortality, 1934

Mr. George Griffiths asked the Minister of Health the numbers of deaths from and arising out of childbirth for the year ending Dec. 31st, 1934.—Sir Hilton Young replied : Deaths registered in England and Wales in the calendar year 1934 included 2747 classified to pregnancy and childbearing, and 748 not so classified, but returned as associated with those conditions, amounting in all to 3495. The figures are provisional.

Mr. Pike : Is my right hon. friend aware that many of these deaths are due to the fact that there is a considerable lack of maternity services throughout the whole of the industrial areas ?

Sir Hilton Young : No, Sir. The suggestion contained in the question is entirely without justification.

Sir Francis Fremantle : Has my right hon. friend had his attention drawn to the experiment in Rochdale where as a result of intensive propaganda of existing organisations they were able, in the course of three years, to reduce maternal mortality to about one-third of what it was previously ?

Mr. Griffiths : Is it not a fact that there were 51 more deaths than in the previous year and that the percentage is going up ?

Viscountess Astor : Is it not true that people dare not face up to a great many of the causes of maternal mortality, even in the House of Commons, and that until we do face up to some of these causes, such as disease and the lack of birth-control centres, we shall never get down the death-rate ?

Mr. Griffiths : And look after the feeding of the people.

Sir Hilton Young : It has been found to be entirely the case, after investigation, that the causes of maternal mortality are many and varied. It requires most careful investigation into particular cases, and it cannot be ascribed to any single or general cause.

Basement Dwellings in London

Mr. Lyons asked the Minister of Health if any recent investigations had been made into the number and character of basement dwellings in various parts of London; and the conclusions reached or representations made in the matter.—Sir HILTON YOUNG replied: According to returns obtained by the London County Council last year from the Metropolitan Borough Councils there were in London 20,108 underground rooms habitually used for sleeping purposes which were deemed unfit for human habitation within the meaning of Section 18 of the Housing Act, 1925. As regards the latter part of the question, Clause 71 of the Housing Bill now before this House is designed to extend the powers of the local authorities for dealing with basement dwellings.

TUESDAY, MAY 7TH

Temperature in Hot and Deep Mines

Mr. TINKER asked the Secretary for Mines if he was in a position to make a statement in respect of the temperature in hot and deep mines; and if the Hot and Deep Mines Committee or the Safety in Mines Research Board had come to a decision as to what the maximum temperature should be in mines.—Mr. E. BROWN replied: The matter continues to be the subject of general and practical study by a research committee, and of ameliorative action in particular cases. I have not received any recommendation in favour of fixing a maximum limit of temperature.

MEDICAL NEWS

University of Cambridge

On May 4th the following degrees were conferred:—

M.D.—M. H. Salaman and H. E. Nourse.

M. Chir.—F. W. Holdsworth.

M.B., B.Chir.—A. C. E. Cole, G. E. H. Tisdall, A. T. Blair, H. J. V. Morton, Ashton Miller, G. L. Ward, and L. W. B. Dobbin.

M.B.—E. A. M. Halsted (by proxy), W. H. H. Jebb, H. M. Chappel, P. W. Hutton, J. W. Macmillan, T. M. Bell, W. D. Dick, J. W. Maycock, and A. S. Herington.

B.Chir.—R. J. Buxton.

University of London

On May 28th, 30th, and 31st, at 5.30 P.M., at King's College, Strand, W.C., Dr. Daniel de Lange, director of the Hubrecht Laboratory of the Embryological Institute at Utrecht, will lecture on the head problem in chordates. Prof. J. P. Hill, F.R.S., will take the chair at the first lecture.

Royal College of Physicians of London

Licences to practise (in addition to those given in our issue of May 4th) were conferred by the College upon 84 candidates (78 men and 6 women) who have now completed the final examination of the Conjoint Board and have complied with the College by-laws. The following are the names and medical schools of the successful candidates:—

M. P. Adel, St. Bart.'s; J. K. Adranvala, Bombay and Sheff.; D. G. Allen, Camb. and King's Coll.; Minnie Atkin, King's Coll.; E. B. D. Bangay, St. Bart.'s; A. L. W. Bell, Guy's; M. H. Bob, St. George's; H. V. Brown and J. A. G. Carmichael, Guy's; H. B. C. Carter-Locke, St. Thos.; L. J. Clapham, St. Mary's; J. V. Clark, Guy's; P. E. G. Clements, St. Bart.'s; M. Cohen, King's Coll.; S. Cohen, St. Bart.'s; L. Cooperman, Wits'rand and West Lond.; F. F. Croft, St. Bart.'s; A. P. Dale-Bussell, Guy's; M. C. Damkengrit, Camb. and St. Thos.; Debora David, Royal Free; C. E. M. de Gruchy and G. C. Denny, Guy's; E. P. H. Drake, Camb. and St. Bart.'s; F. P. Ellis, Charing Cross; M. A. Falconer, Otago; J. S. Feynman, Middlesex; J. W. Fisher, Westminster; W. P. Fitch, Guy's; R. J. Force-Jones and L. D. B. Frost, St. Bart.'s; R. T. Gabb, Camb. and St. Bart.'s; J. G. Gladston, St. George's; C. J. Gordon, Camb. and St. Bart.'s; G. B. Grayling, St. George's; K. L. Grogono, London; J. A. G. Hair, Univ. Coll.; J. A. J. Hammond, Guy's; W. F. Harvey, Lond.; T. H. Hills, Guy's; E. D. Hoare, Camb. and St. Mary's; J. J. V. Hopkins and H. M. Hugh, St. Bart.'s; Ruth Hull, King's Coll.; R. F. Jarrett, Camb. and St. George's; J. D. Jenkins, Middlesex; D. V. John, Camb. and Univ. Coll.; I. Klinger, King's Coll.; F. H. Lee, Guy's; D. Levine, Cape and St. Bart.'s; I. W. MacKichan, Camb. and Lond.; P. E. C. Manson-Bahr, Camb. and Lond.; J. H. Mayer, Guy's; M. S. M. Mehta, Bombay and Guy's; H. S. Mellows, Camb. and King's Coll.; W. J. Mitchell and J. F. Morris, Guy's; S. J. Navin, St. Mary's; R. J. Niven, St. Thomas's; W. O. G. Paget, St. Bart.'s; J. H. Patterson, Camb. and St. Bart.'s; S. Phillips, King's Coll.; F. O. Potter, Guy's; A. E. K. Price, Middlesex; G. R. Rawlings, Camb. and St. Thos.; W. M. Rich, King's Coll.; J. S. Richardson, Camb. and St. Thos.; W. B. Ridsdel, Camb. and Lond.; E. P. Rigby, St. Bart.'s; Jean Ross, Univ. Coll.; V. Sankarambal, Madras and Royal Free; J. Schorstein, Vienna and Univ. Coll.; D. S. Scott, Camb. and Lond.; M. J. Shah, Bombay and Lond.; F. A. Simmonds, Camb. and St. Thos.; F. R. Smith, Birm.; J. E. Spalding and D. P. Stevenson, Guy's; K. Tatz, Wits'rand and Guy's; F. Taylor, Guy's; W. Warren, Camb. and St. Bart.'s; C. E. Watson, Camb. and St. Thos.; A. B. Wayte, Guy's; Helen E. Wight, Royal Free; and E. D. H. Williams, Guy's.

National Institute of Industrial Psychology

Under the auspices of this institute three lectures on the temperamental factor in industry are to be given at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., at 5.30 P.M. on Mondays, May 13th, 20th, and 27th. Prof. Major Greenwood, F.R.S., will deliver the first two, and Miss May Smith, D.Sc., the third. Admission is without ticket.

Jubilee Gifts

Mr. Joseph H. Jacobs has given to St. Bartholomew's Hospital the means to install a new 200 kilovolt X ray therapy apparatus in the radiological department.

Indian Research Fund Association

Dr. Wallace Ruddell Aykroyd has been appointed director of nutritional research under this association.

Ministry of Pensions

Lord Dawson, Sir Farquhar Buzzard, and Sir Lisle Webb have been appointed hon. consulting physicians to the Ministry, and Sir Holburt Waring, Lord Moynihan, and Mr. R. C. Elmslie hon. consulting surgeons.

Glasgow University Club

The London branch of this club will hold a dinner at the Trocadero Restaurant, Piccadilly, W., on Friday, May 31st, at 7.15 for 7.30 P.M., when Lord Macmillan, the president, will be in the chair. The honorary secretaries may be addressed at 62, Harley House, London, N.W.1.

Research Fellowships in Tuberculosis

The Dorothy Temple Cross research fellowships in tuberculosis for 1935–36 will shortly be awarded by the Medical Research Council. The object of these fellowships is to give special opportunities for study and research to workers who intend to devote themselves to the advancement by teaching or research of curative or preventive treatment of tuberculosis. Candidates must be British subjects and must possess suitable medical, veterinary, or scientific qualifications; preference will be given to those who wish to make their studies or inquiries outside Great Britain. The value of the fellowships awarded will not be less than £350 per annum, exclusive of allowances, and they will as a rule be tenable for one year. It may also be possible to award a senior fellowship of considerably greater value to a specially well-qualified candidate who wishes to study some particular problem at a chosen centre in another country. Further particulars and forms of application are obtainable from the secretary of the council, 38, Old Queen-street, Westminster, S.W. 1. Application must be made by June 1st.

Welsh National School of Medicine

Mr. Lambert Rogers, F.R.C.S., reader in surgery at the British Postgraduate Medical School, has been appointed director of the surgical unit of the school and professor of surgery in the University of Wales.

Lambert Charles Rogers qualified M.R.C.S. Eng. in 1920 from the Middlesex Hospital, where he held posts as house surgeon and demonstrator in anatomy. He was then appointed resident surgical officer at the Stockport Infirmary and from there he went to the Welsh National School of Medicine as assistant director of the surgical unit. This post he held until his election last year to the readership in surgery at the British Postgraduate Medical School. Mr. Rogers was the Rogers prize essayist of the University of London in 1921, was proxime accessit for the Jacksonian prize of the Royal College of Surgeons of England in 1931, and was elected a Hunterian professor to the College in 1934 (see THE LANCET, 1935, i., 187). He became M.Sc. Wales and F.A.C.S. in 1928, and F.R.A.C.S. in 1931. His chief contributions to medical literature have been on neuro-surgery and the surgery of the thyroid.

Other appointments made were: Dr. Frank Hawking, assistant lecturer in materia medica and pharmacology; Dr. J. M. L. Burtenshaw, assistant lecturer; Dr. R. W. John, demonstrator in pathology and bacteriology; and Mr. Alan Goode, junior assistant in the surgical unit.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, May 14th.

Therapeutics and Pharmacology. 5 P.M. (House of the Pharmaceutical Society, Bloomsbury-square, W.C.), Annual General Meeting. Demonstrations: J. Plesch: Tonoscillograph. J. Plesch and E. P. Poulton: Apparatus for Increasing Intrapulmonary Pressure in Treatment of Acute Pulmonary Œdema. M. R. Gurd: Reticulocytes in the Blood of the Pigeon. F. Wokes: Estimation of Thyroid. E. Bülbring and J. H. Burn: Vaso-dilator Fibres in the Sympathetic Supply of the Blood Vessels of the Muscles of the Dog. Communications: K. H. Coward: Effect of Cooking on Amount of Vitamin A present in Vegetables. E. Bülbring and J. H. Burn: Estimation of Œstrone in Oily Solution.

Psychiatry. 8.30 P.M. Annual General Meeting. Dr. C. P. Blacker: The Uses and Limitations of Sterilisation in Social Psychiatry.

Thursday.

Dermatology. 5 P.M. (Cases at 4 P.M.) Annual General Meeting. Cases: Dr. Henry MacCormac: 1. Arsenic-resistant Syphilis. Mr. H. Corsi: 2. Case for Diagnosis. ? Lupus Erythematosus. Dr. G. B. Dowling: 3. Sarcoma of the Skin. 4. Morphœa. Other cases will be shown.

Neurology. 7.45 P.M. (National Hospital, Queen-square, W.C.), Annual General Meeting. Cases will be shown.

Friday.

Physical Medicine. 5 P.M. Annual General Meeting.

Radiology. 7 P.M. Annual General Meeting.

Obstetrics and Gynæcology. 8 P.M. Annual General Meeting. Discussion: Diet in Pregnancy. Openers: Dame Louise McIlroy: Diet Requirements in Pregnancy. Dr. G. W. Theobald: The Deficiency Hypothesis of the Toxæmias of Pregnancy. Prof. S. J. Cowell: Calcium Requirement and Calcium Metabolism in Pregnancy.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.

Monday, May 13th.—8 P.M., Annual General Meeting. Sir William Wilcox: Toxic Drugs: Their Use and Misuse. (Annual Oration.)

EUGENICS SOCIETY.

Tuesday, May 14th.—5.15 P.M. (Rooms of the Royal Society, Burlington House, Piccadilly, W.), Prof. R. A. Fisher, F.R.S.: Eugenics, Academic and Practical.

PADDINGTON MEDICAL SOCIETY.

Tuesday, May 14th.—9 P.M. (Great Western Royal Hotel, Paddington, W.), Dr. G. P. Crowden and Dr. P. M. T. Kerridge: The Audiometer and Artificial Aids to Hearing.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland-place, W.

Thursday, May 16th.—8.15 P.M., Dr. D. H. K. Lee: The Human Organism and Hot Environments.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.

Thursday, May 16th.—8 P.M., Mr. G. Shearer: The X Ray Microscope. (Presidential Address.)

Medical Section.

Friday, May 17th.—11 A.M., Visit to the X Ray Department of the Middlesex Hospital. 5 P.M., Case Demonstration and Discussion.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Thursday, May 16th.—2.30 P.M. (11, Chandos-street, W.), Dr. A. A. W. Petrie: Mental Health Services.

TUBERCULOSIS ASSOCIATION.

Friday, May 17th.—5.15 P.M. (2
Dr. H. P. Nelson and Dr. Pete
Paralysis of the Diaphragm.
Kerley and Dr. J. V. Sparks:
and the Interpretation of Radiographs.

ROYAL MICROSCOPICAL SOCIETY.

Wednesday, May 15th.—5 P.M. (B.M.A. House, Tavistock-square, W.C.), Mr. R. S. Clay and Mr. T. H. Court: The Early Achromatic Objective. Dr. G. M. Findlay: Variation in Viruses.

SOCIETY OF CHEMICAL INDUSTRY.

Monday, May 13th.

London Section.—8 P.M. (Chemical Society's Rooms, Burlington House, W.), Prof. F. L. Pyman, F.R.S.: Some Lines of Research in Chemotherapy.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.

Sunday, May 12th.—8.30 P.M. (44, Lancaster-gate, W.), Prof. C. Seligman: Some Aspects of Race Psychology. (Annual Oration.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

Tuesday, May 14th, and Thursday.—5 P.M., Sir Edmund Spriggs: A Clinical Study of Headaches. (Croonian Lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, May 13th, to Saturday, May 18th.—Brompton Hospital, S.W. All-day course in thoracic surgery.—Maudsley Hospital, Denmark-hill, S.E. Afternoon course in psychological medicine.—St. John's Hospital, Leicester-square, W.C. Afternoon course in dermatology. (Open to all.)—Courses arranged by the Fellowship are open only to members and associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, May 16th.—2 P.M., Mr. James Crooks: Infection of the Ear and Sinuses. 3 P.M., Dr. W. W. Payne: Carbohydrate Metabolism.

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

Monday, May 13th.—10 A.M., Medical and Surgical Wards, Genito-urinary Operations, Skin Clinic. 2 P.M., Gynæcological and Surgical Wards, Eye and Gynæcological Clinics.

Tuesday.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Nose, Throat, and Ear Clinic.

Wednesday.—10 A.M., Medical Wards, Children's Wards and Clinic. 2 P.M., Gynæcological Operations and Eye Clinic.

Thursday.—10 A.M., Neurological and Gynæcological Clinics. 12 noon, Fracture Demonstration. 2 P.M., Genito-urinary and Eye Clinics. 3.45 P.M., Venereal Diseases Clinic.

Friday.—10 A.M., Skin Clinic. Noon, Lecture on Treatment. 2 P.M., Throat, Nose, and Ear Clinic.

Saturday.—10 A.M., Medical Wards, Children's and Surgical Clinics.

Operations, Medical and Surgical Clinics daily at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

Monday, May 13th.—5 P.M., Dr. R. T. Brain: Rodent Ulcer.

Tuesday.—5 P.M., Dr. H. MacCormac: Treatment of Syphilis.

Wednesday.—5 P.M., Dr. I. Muende: Pathological Demonstration.

Friday.—5 P.M., Dr. W. Griffith: Bullous Eruptions.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Monday, May 13th, to Saturday, May 18th.—Intensive Clinical Course.

ST. MARY'S HOSPITAL, W.

Thursday, May 16th.—5 P.M. (Institute of Pathology and Research), Dr. Igor N. Asheshow: Bacteriophage.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.

Wednesday, May 15th.—3 P.M., Dr. H. Crichton-Miller: Anxiety. 4.30 P.M., Dr. Cedric Shaw: Hyperthyroidism.

NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY.

Monday, May 13th.—5.30 P.M. (at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C.), Prof. M. Greenwood, F.R.S.: The Modern Importance of the Temperamental Factor and its Ancient History. (Course of three lectures on the Temperamental Factor in Industry.)

UNIVERSITY OF BIRMINGHAM.

Tuesday, May 14th.—3.30 P.M. (General Hospital), Dr. E. W. Assinder: V.D. Cases of Interest.

(Anatomy Theatre, The Univer-
Dr. Howard Collier: Industrial

Friday.—3.30 P.M. (Children's Hospital), Dr. W. Carey Smallwood: Diagnosis and Treatment of Chronic Bronchitis and Bronchiectasis in Infancy and Childhood.

UNIVERSITY OF LONDON.

Monday, May 13th.—5 P.M. (University College), Dr. D. H. K. Lee: Physiological Effects of Tropical Climate. (First of four lectures.)

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

Sunday, May 12th.—10.30 A.M. (Newcastle General Hospital), Mr. J. Collingwood Stewart: Abdominal Distension and its Significance.

ROYAL INFIRMARY, Manchester.

Tuesday, May 14th.—4.15 P.M., Dr. William Brockbank: Lung Cancer.

Friday.—4.15 P.M., Mr. J. P. Buckley: Demonstration of Surgical Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

Wednesday, May 15th.—4.15 P.M. (Victoria Infirmary), Dr. W. Herbert Brown: Skin Cases.

ROYAL INFIRMARY, Dundee.

Thursday, May 16th.—3.15 P.M., Cinematograph film: The Science and Art of Obstetrics.

Appointments

Ellis, G. R., M.B. Camb., M.R.C.P. Lond., has been appointed Hon. Assistant Physician to the General Hospital, Birkenhead.

Gray, W. A., M.B. Edin., F.R.C.S. Eng., Ophthalmic Surgeon to the Corporation of Barking.

Kelynack, A. V., M.B. Lond., reappointed Senior Resident Medical Officer to the Royal Free Hospital.

Masterson, T. L., M.D. St. And., F.R.C.S. Edin., Resident Surgical Officer to the Huddersfield Royal Infirmary.

McFarland, B. L., M.D., M.Ch. (Orth.) Liverp., Hon. Orthopædic Surgeon to the Royal Southern Hospital, Liverpool.

Richmond, Arthur, M.B. Victoria, D.P.H., Medical Officer of Health to the Berkshire County Council.

SACHS, LEONARD, M.D. Bern., L.M.S.S.A. Lond., Resident Medical Officer to the Royal Bath Hospital, Harrogate.

City of London Hospital for Diseases of the Heart and Lungs.—The following appointments are announced:—
HUDSON, E. H., M.B. Camb., M.R.C.P. Lond., Out-patient Physician;
WOOD, F. G., M.B., D.M.R.E., Radiologist;
RUSBY, N. L., B.M. Oxon., M.R.C.P., Registrar; and
GRANT, C. A., M.R.C.S. Eng., D.M.R.E., Assistant Radiologist.

Royal Borough of Kensington.—The following appointments are announced:
HUNTER, J. W., M.D. Edin., D.P.H., Deputy Medical Officer of Health and Tuberculosis Officer.
BUCK, Helen, M.B. Lond., D.C.O.G., Maternity and Child Welfare Medical Officer.
DAVIS, H. M., M.B. Liverp., D.P.H., Maternity and Child Welfare Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: Dr. W. M. MARTIN (Peebles, Peebleshire); Dr. A. H. DRIVER (Leominster, Herefordshire); and Dr. A. MENZIES (Youlgreave, Derbyshire).

Vacancies

For further information refer to the advertisement columns

[illegible]—Ophthalmic Surgeon.
[illegible] I.O. At rate of £150.
[illegible] *ry.*—Cas. O. £250.
[illegible] it and Cas. O. £150.
[illegible] ond H.S. At rate of
[illegible] H.P. At rate of £150.
[illegible] *Hospital.*—Two Asst. Res. M.O.'s. Each at rate of £150.
Birmingham, Canwell Hall Babies' Hospital.—Res. M.O. At rate of £250.
Birmingham City Maternity and Child Welfare Dept.—Temporary M.O.'s. Each £10 per week.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120. Also Hon. Phys. for Dis. of Children.
Bolton Royal Infirmary.—Two H.S.'s. Each £125.
Bradford, Royal Ear and Eye Hospital.—H.S. £160.
Brighton, Royal Sussex County Hospital.—Second Hon. Radiologist.
Burton-on-Trent General Infirmary.—Cas. O. and H.P. £150.
Cambridge, Physiology School.—George Henry Lewes Studentship. £250.
Cancer Hospital, Fulham-road, S.W.—Asst. Radium Officer. £350.
Cardiff, King Edward VII Welsh National Memorial Assn.—Asst. Tub. Physician. £500.
Cardiff, Welsh National School of Medicine.—Part-time Demonstrator. £50. Also Jun. Asst. in Medical Unit. £250.
Central London, Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Third Res. H.S. At rate of £75.
Chester Royal Infirmary.—H.S. £150.
City of London Institution, 2a, Bow-road, E.—Asst. M.O. £250.
Coventry, Gulson-road Municipal Hospital.—Second Asst. Res. M.O. £250.
Coventry and Warwickshire Hospital.—H.S. for Aural and Ophth. Depts. At rate of £125.
Derbyshire Royal Infirmary.—Ophth. H.S. and Anæsthetist. £150.
Ealing Borough.—Asst. M.O. £450.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.
Fulham Hospital, St. Dunstan's-road, W.—Asst. M.O. £350.
Greenwich, Dreadnought Hospital.—Asst. Radiologist. 50 gns.
Grimsby Corpora[illegible] I.O. £350.
Halifax General [illegible] O. £250.
Hastings, Royal [illegible] -Hon. Phys.
Herefordshire General Hospital.—H.S. and Cas. O. At rate of £100.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. for Dept. of Pathology. £350.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.
Hull Royal Infirmary.—Cas. O. At rate of £150.
Huntingdon Administrative County.—Asst. County M.O. and Asst. School M.O. £50 a month.
Indian Medical Service.—Commissions.
Iraq Governme[illegible] ach £100–£120 per mensem.
King George [illegible] Surg. O. and Res. Asst. Surg. O. [illegible] ectively. Also Two H.P.'s and Three H.S.'s. Each at rate of £100.
King's College Hospital, S.E.—Registrar to Ear, Nose, and Throat Dept.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool, Cleaver Sanatorium for Children, Heswale.—Res. Asst. M.O. £300.
[illegible] *Forest, Frodsham.*—Second Asst.
[illegible] *ol, South Norwood, S.E.*—Part-
[illegible] to Gyn. and Obstet. Dept.
[illegible]—Second H.S. At rate of £150.
[illegible] *almic and Aural Hospital.*—H.S. [illegible] Dept. At rate of £200.
Manchester, Ancoats Hospital.—Cas. O. At rate of £250. Med. Reg. £50. Also H.S. At rate of £100.
Manchester, Monsall Hospital for Infectious Diseases.—Asst. M.O. £350.
Manchester, Park [illegible] Surg. O. £500.
Manchester Royal [illegible]). in Radiological Dept. £350. [illegible] £35.
Manchester, Victor [illegible] . Royce Research Fellowship. £500.
Manchester and Salford Hospital for Skin Diseases, Quay-street.—Two Asst. M.O.'s. Each £100. Also H.S. At rate of £100.
Miller General Hospital, Greenwich-road, S.E.—Out-patient Officer and Two Cas. O.'s. Each at rate of £150. Also H.P. and H.S. Each at rate of £100.
National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Registrar. £200.
Newcastle-upon-Tyne Eye Hospital.—Jun. Res. H.S. £150.
Northampton County Mental Hospital, Berrywood.—Jun. Asst. M.O. £350.
Oswestry, Robert Jones and Agnes Hunt Orthopædic Hospital.—H.S. At rate of £200.
Oxford, Wingfield-Morris Orthopædic Hospital.—H.S. £100.
Plymouth, Prince of Wales's Hospital, Devonport.—H.P. and Cas. O. At rate of £100. Also Res. Surg. and H.S. At rate of £200 and £120 respectively.
Preston, Sharoe Green Hospital.—Sen. Asst. Res. M.O. At rate of £150.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.
Radium Institute, Riding House-street, W.—H.S. At rate of £150.
Reading, Royal Berkshire Hospital.—Cas. O. and H.S. Each £125.
Royal College of Surgeons of England.—Two Examiners in Dental Surgery. Also Court Examiners.
Royal Free Hospital, Gray's Inn-road, W.C.—First Asst. in Children's Dept. At rate of £115.
Royal Northern Hospital, Holloway, N.—Res. M.O. £370. Also H.S. and H.P. Each at rate of £70.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £200. Also H.S. At rate of £100.
St. George-in-the-East Hospital, Raine-street, E.—Asst. M.O. £250.
St. Giles' Hospital, Brunswick-square, S.E.—Clin. Asst. At rate of £150.
St. Helens County Borough.—Deputy M.O.H. £700.
St. James' Hospital, Ouseley-road, S.W.—Asst. M.O. £250.
St. Luke's Hospital, Sydney-street, S.W.—Asst. M.O. £350.
Sheffield Royal Infirmary.—H.P. At rate of £80. Also Clin. Asst. £300.
Southampton, Royal South Hants and Southampton Hospital.—Cas. O., Res. Anæsthetist, and H.S. Also H.S. Each at rate of £150.
Southend-on-Sea General Hospital.—Med. Reg. £300. Surg. Reg. £250. Also Cas. O. At rate of £100.
[illegible] sst. M.O. £600.
[illegible] . and Jun. H.S.'s. £200.
Stoke-on-Trent, Longton Hospital.—H.S. £160.
Sunderland Royal Infirmary.—H.P. and H.S. Each £120.
Talgarth, Breconshire, Mid-Wales Counties Mental Hospital.—Asst. M.O. £350.
Taunton and Somerset Hospital.—H.S. At rate of £100.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital Dental School, University-street, W.C. Demonstrator in Mechanical Dept. £200.
Wembley Urban District Council.—Part-time Clinic M.O. £1 11*s.* 6*d.* per session.
West End Hospital for Nervous Diseases, Regent's Park.—Hon. Anæsthetist.
West Bromwich and District General Hospital.—H.P. At rate of £200.
Wolverhampton, Royal Hospital.—H.S. At rate of £100.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E. H.P. and H.S. Each at rate of £100.
York City.—Sen. Asst. School M.O. Also Asst. School M.O. Each £500. Also Temp. Asst, M.O. £500, and Temp. Res. M.O. £250.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Llanberis, Caernarvonshire.

Births, Marriages, and Deaths

BIRTHS

ATKINS.—On April 29th, at Devonshire-place, W., the wife of Hedley Atkins, F.R.C.S. Eng., of a son.

HODGKINSON.—On May 5th, at Lymington, Hants, the wife of H. Ll. Hodgkinson, M.R.C.S. Eng., of a son.

MARRIAGES.

BERRY—INGRAM.—On May 4th, at the Parish Church, Wimbledon, Sir James Berry, F.R.C.S. Eng., of Wendover, to Mabel Marian, daughter of the late T. Lewis Ingram and Mrs. Ingram, of The Priory, Wimbledon Common.

TWEED—HOGGE.—On May 2nd, at St. Matthew's, Ealing, W., James G. Tweed, M.B. Belf., to Betty Josephine Hogge.

DEATHS

BROOKS.—On April 28th, Francis Augustus Brooks, M.D. Brux., M.R.C.S. Eng., of Lonsdale-road, W., in his 73rd year.

FFENNELL.—On May 3rd, at Walton, Clevedon, Edward Barrington Ffennell, M.D. Dub., aged 72 years.

STAMFORD.—On May 4th, suddenly, at Loughborough, Robert Basil Stamford, F.R.C.S. Edin.

WALKER.—On April 30th, Horace Walker, M.R.C.S. Eng., late of Hammersmith.

WHARRY.—On April 27th, at Whitstone Head, Holsworthy, N. Devon, Robert Wharry, M.D. Aberd., in his 82nd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

GUY'S HOSPITAL: PROFITABLE ENTERPRISE

AMONG the statements of account which have recently been presented to the governors of Guy's Hospital on the working of the year 1934, one deals with the cost of feeding the nursing, administrative, and domestic staff of the hospital. It is stated that though the food provided is generous and of good quality, containing a substantial allowance of meat, fish, butter, and plenty of eggs, vegetables, and other foodstuffs, yet the cost to the hospital of feeding its nursing and other staff works out at only 6*s*. 6*d*. a week per head. It is clear that, even when the reduction in price of food bought in large quantities is taken into consideration, good and sufficient food cannot be provided at such a low cost without very wise buying and expert handling of materials. Another statement shows that the whole cost of housing the nurses, including repairs and maintenance of the nurses' homes, insurance and rates on them, wages of maids, renewals of furniture, bedding, hardware and crockery, cleaning materials, staff uniforms, and laundry, works out at a fraction less than 10*s*. a week per head. At this hospital, at any rate, the emoluments of the probationers and nurses amount to less than the rate of £50 a year at which they are assessed in the Federated Superannuation Scheme for Nurses and Hospital Officers.

A statement is also made on the year's working of Guy's Hospital shop. This was started a few years ago in a kind of large kiosk in the hospital grounds for the benefit of patients and nurses, and is now quite a flourishing little business, making a profit for the hospital funds. The shop sells all manner of goods likely to be needed by patients, who send their orders from the wards by their visiting relations, or by voluntary helpers who take trays of things like sweets and tobacco, and lists of other items stocked by the shop, round the wards from time to time. The stock includes biscuits, cakes, and light foodstuffs, including ice-cream, all kinds of haberdashery, and articles of clothing such as night-wear, bed-jackets, or such garments as patients brought into the hospital unprepared, or staying longer than they had anticipated, might need. The account for the year 1934 shows that the shop, after paying all expenses—salaries, repairs, electricity, gas and water, cleaning, rent, and rates—made a profit on trading of 19·5 per cent., which represents £462 19*s*. 1*d*. in cash.

Another profit-making section of the hospital is its paying patients' ward, a pioneer institution of its kind, having been first started over 30 years ago. From a financial point of view the ward is run as a separate unit, and when all expenses, including rent, rates, and taxes, and proportion of administration, have been deducted from income, the profit for the year 1934 is shown as over £3000.

Still another successful enterprise of Guy's is its electricity generating station, which supplies all current required for the manifold demands of this great hospital at a cost which works out at approximately 0·7*d*. a unit.

THE LEVEL OF AMPUTATION

WE have already summarised some of Prof. René Leriche's invective against rapid amputations slavishly reproducing those of the operative surgery class (Jan. 5th, p. 38). In the same paper he pointed out that amputation in the presence of local circulatory failure has problems of its own, and unless there is moist gangrene and spreading septic infection it rarely need be looked on as an emergency operation. There is time, he said, to consider in detail the indications for amputation at a particular level; and sometimes it is profitable to try to increase the efficiency of the circulation and thus the chances of successful healing at a lower level.

Writing on the same subject last year, R. W. McNealy and Philip F. Shapiro (Surg., Gyn., and Obst., 1934, lix., 650) suggested that safety is too often sought by amputating above the knee, wh a careful investigation would have saved the patie from a needlessly mutilating operation. In at lea one class of case—commencing gangrene of the to in thrombo-angiitis obliterans—this consideration of great importance, for the patients are often you and active. The other two main causes of loc vascular failure are arterio-sclerosis and diabete and here, of course, general principles of saving li may come before attempts to save six inches more of a limb which the patient is never likely put to much use. The type of gangrene in diabet which is infective in origin is, however, to be disti guished from that due to early arterio-sclerosis, sin it does not necessarily require more than a limite amputation.

McNealy and Shapiro gave a detailed account the tests they use in deciding on the level of amput tion. The decision most often lies between amput tion of a toe, amputation through the leg 6–9 inch below the knee-joint (which is the best level) or 4–6 inches (which gives a good enough stump), amputation through the thigh. They dismiss amp tations between these levels as not being very usef *in fitting the artificial limb. A good idea of circulato* efficiency can usually, they find, be gained from t history and clinical tests. Amputation below t knee, for example, is likely to be feasible if pulsati is palpable in the popliteal artery, and if the temper ture and colour tests are good as far down as t ankle. The colour test is especially important; t limb is raised and the level of the anæmia note as also the level of the rubor appearing when t limb is dropped. Two special methods have al proved helpful. An oscillometer is used to deci the level of pulsatile *collateral* supply, as distin from palpable pulsation in the large vessels; an histamine solution (1 : 1000) is injected intr cutaneously because it will produce definite sk changes only in an adequately vascularised zone These changes are a cyanotic flush, a hyperæmi flare, and finally a weal.

A HANDY EPIDIASCOPE.—The cost of an epidia scope, in many cases the main objection to its instal lation, has been further reduced by Messrs. Newto and Co., of Wigmore-street, London. The "Wigmore" Epidiascope, a satisfactory instrument for class-room purposes, can be obtained for about £16. Its projectio distance may be as great as 14 feet, and a picture a large as 7 feet in diameter can be produced. This wil no doubt be a valuable addition to the epidiascope of British manufacture now available at a reasonabl price.

HUTCHINSON'S TECHNICAL AND SCIENTIFIC ENCY CLOPÆDIA, in three volumes of which the first i before us, has been planned to supply the studen and the teacher with a description of processes tha will enable them to understand how science is applie in industry. The work covers a very wide fie and the articles which vary from a line or two four or five pages, are from the pens of acknowledg experts. The book is edited by Mr. C. F. Twene already well known in the production of simil compilations, and Mr. I. P. Shirshov, A.M.I.E. to whom readers who desire a reference to addition sources of information will be grateful for the bibli graphy promised them at the end of the complete encyclopædia. Medicine is only dealt with inc dentally, the article on bacteria, for instance, bein concerned with industrial processes rather tha disease, but there are short but useful paragraph under such headings as Adrenalin, Antiseptics Carotene, Cod-liver Oil, and so forth, and we lear that Annatto is used chiefly for colouring chees and butter—although it is now illegal in milk. This volume of the Encyclopædia contains 672 pages and costs 28*s*.

ADDRESSES AND ORIGINAL ARTICLES

VISION
) ITS DISTURBANCES IN RELATION TO CEREBRAL LESIONS *

WILFRED HARRIS, M.D. Camb., F.R.C.P. Lond.
LTING PHYSICIAN TO ST. MARY'S HOSPITAL, AND SENIOR PHYSICIAN TO THE HOSPITAL FOR NERVOUS DISEASES, MAIDA VALE

(WITH ILLUSTRATIONS ON PLATE)

SUAL organs in animals have been developed ding to their needs, and vary in complexity from hes of pigmented epithelium, as in the median of amphioxus, perhaps the lowest of the verte-s, to the highly developed paired eyes of the efish and squids amongst the mollusca. These r require keen vision, as they rapidly change colour reflexly according to the colour of the bottom as they swim along, and also for the uit of their prey.

the lowest class of fishes, the cyclostomata, the rey, and hag fish, the optic nerves are budded from the sides of the mesencephalon, and do decussate, but in the elasmobranchs (sharks, &c.) and all the bony fishes, birds, and mammals, optic nerves decussate in the chiasma. In some ivorous fishes, such as the porbeagle and fox ks, and in most carnivorous birds, such as hawks, , and vultures, and in many gulls, such as the et, the eyes are set forward on the face at such ngle that a considerable degree of binocular n is possible, and it is obvious that this arrange- must be of considerable assistance to these , who have to hunt for and catch their rapidly ing prey; particularly is this so in many owls, cially the common barn owl. These birds, being urnal, require a more accurate vision than ks, who work by day. The wonderful keenness ight of vultures is well known, how quickly they ear out of the blue empyrean when an animal dying; but accuracy of striking is less necessary heir case than in owls, and their eyes are not ed as far forward as in the latter.

et in all fishes and birds, whether vegetable ers or carnivorous, whether their eyes are set rally with panoramic vision or forwards on the with binocular vision, the optic nerves decussate pletely, every fibre crossing to the opposite lobe. It is not until we reach the mammals that s of semi-decussation of the optic nerves is . In animals with completely laterally set eyes, as the hare and rabbit, whose food does not way from them and whose panoramic vision ful to them in seeing their food or an enemy her side at a distance, the optic nerves decussate ically completely; yet it is possible to demon- microscopically that a few fibres do pass d from the optic nerve into the optic tract e same side. These animals have no binocular n, and it is well known that a hare may run ght forwards towards the gun, as it cannot see ght in front.

e object of binocular vision is well seen by a of the chameleon.[1] This little animal has us eyes ensheathed in horny epidermis, and the eyes work quite independently of each other, moving about in a jerky fashion, almost like searchlights. One may be pointing backwards and the other forwards, but if the animal catches sight of a juicy morsel, such as a mealworm held up a few inches in front of him, presently one eye will catch sight of it and then the other eye is swept round, both eyes being focused accurately upon the worm, the mouth then slowly opening and the tongue suddenly shot out, like a boomerang, to catch its prey and sweep it into its mouth.

In carnivorous animals binocular vision becomes well marked, especially so in the felidæ, cats, lions, and tigers, whose eyes are set practically as far forward as in the primates. These animals hunt particularly by night, and having to catch living prey consequently require keen vision, the eyes therefore being set far forward in the head, and section of the chiasma shows that a very considerable bundle of the nerve-fibres does not decussate, passing round into the optic tract on the same side. These animals, therefore, have developed stereoscopic in addition to binocular vision, the two images from the two eyes being overlaid on the same area of visual cortex on each side. When we examine the primates, monkeys, anthropoids, and man, binocular vision is even more fully developed, and though all monkeys and the anthropoid apes are vegetable feeders and do not have to catch living prey, yet now the value of binocular stereoscopic vision is associated with the development of the hand as a prehensile organ, objects seized being subject to careful inspection by vision. Section of the chiasma shows an even larger non-decussating bundle, though even in man the decussating bundle is much the larger of the two.

Optic Chiasma

Owing to the semi-decussation of the optic nerves at the chiasma and the relationships of these fibres to the sphenoid bone underneath, the pituitary fossa below and behind, and the third ventricle above, localised damage of these fibres can be produced in various ways. A fracture of the base may pass through the middle line of the sphenoid, damaging the central fibres of the optic chiasma, causing a typical bitemporal hemianopia. There was a case of this recently in St. Mary's Hospital, and I have seen at least two other examples. From above, pressure on the dorsum of the chiasma may be produced through distension of the third ventricle in hydrocephalus resulting from meningitis, or in cerebellar tumours. (Fig. II. on Plate.) This may cause bitemporal hemianopia followed by complete blindness and optic atrophy. Septic infection of the sphenoidal sinus may affect the optic nerve between the chiasma and the optic foramen, causing local damage of the optic nerve, with varying effects upon vision. The optic nerve itself at the optic foramen may be damaged by fracture, or by tumour of the sphenoid compressing the nerve, causing ultimate blindness.

Some of the most important defects in the visual fields are produced by diseases affecting the pituitary gland. This gland, lying in the sella turcica, is formed developmentally by an upgrowth in the median line of the nasopharynx, called Rathke's pouch, which meets a down-growth from the tuber cinereum in the floor of the third ventricle, called the infundibulum. This infundibulum, which becomes the posterior lobe of the pituitary gland, is enclosed within Rathke's pouch, which forms the anterior

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clinical lecture delivered at St. Mary's Hospital on ith, 1935.
9

lobe and the pars intermedia, the infundibular stalk passing through a diaphragm in the dura mater to reach the floor of the third ventricle. Though the anterior lobe is developed in a somewhat similar fashion to the thyroid gland, yet its endocrine function is very different, largely governing growth and the generative functions, while the posterior lobe secretes a pressor substance, which has a profound effect on raising blood pressure, an intestinal and uterine stimulant, and a galactagogue. It also stimulates carbohydrate metabolism, and its absence leads to excessive deposition of fat.

Giantism

Overgrowth of the anterior lobe, with increased secretion, in young people produces giantism, so long as the epiphyseal junctions of the bones are not ossified.

We need not perhaps accept at their face value the traditional height of Gog and Magog, whose 14 ft. effigies stand in the Guildhall, or the Biblical heroes, Goliath of 11 ft. 9 in., or Og, the king of Bashan, whose bedstead measured 16½ ft. in length. Extraordinary growth has been recorded in certain instances, the recorded limit of height for an English giant, John Middleton, born in 1578, being 9 ft. 3 in., and a Russian, Machnow, with a height of about 9 ft. 5 in. was shown at the Hippodrome in 1905. The skeleton of the Irish giant Patrick Cotter, is still to be seen in Trinity College, Dublin, 8 ft. 7 in. in height, and the well-known skeleton of O'Byrne in the museum of the Royal College of Surgeons, 8 ft. 4 in., which John Hunter procured in a very romantic way.

Giants have been divided into two groups, normal and pathological, but it is highly probable that excessive anterior lobe pituitary activity in the form of a chromophile adenoma is the cause of excessive growth above 6 ft. 9 in., and such giants usually are physically weak or lose their strength comparatively early and die young, while a much enlarged sella turcica has been repeatedly demonstrated e.g., Cushing's[3] case of 8 ft. 4 in. Acromegalic features, such as abnormally long arms and legs, and hands and feet large out of proportion are also usually present. In addition to these great heights, the extremities in some of these individuals were more than correspondingly large, John Middleton's hand measuring 17 in., and the foot of the Russian Machnow, 24 in.

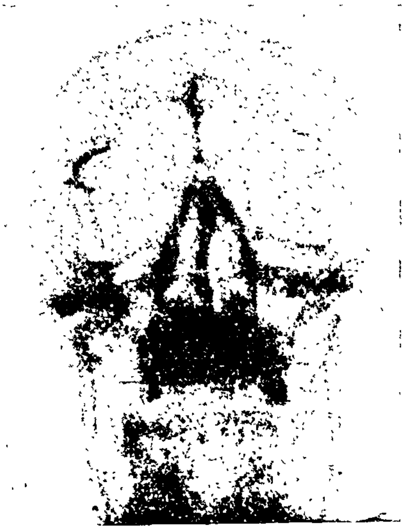

FIG. III.—*Acromegalic skull. Anterior view* (× ⅙).

Acromegaly

When the hyperactivity of the anterior lobe of the pituitary begins to take effect later in life, after the bony epiphyses have become set, then excessive height is no longer possible, but the skeleton and body take on the curious features known as acromegaly. The disease was first described and named by Pierre Marie in 1886, though the characteristic appearance must have been not unfamiliar through the ages, for a thirteenth century stone statue of a woman, an obvious sufferer from the disease, is, or was, to be seen on Reims cathedral.[3] The word means enlargement of the extremities, and the hands and feet take on a curious overgrowth, the hands becoming spade-like; the skull increases in size so that larger and larger sizes in hats become necessary, the lower jaw much enlarged and protruded, with the lower teeth perhaps ¾ in. in front of the upper, the teeth being spaced, and the tongue and lower lip, and the nose and ears enlarged and often somewhat cyanosed. Often the arms are abnormally long, and there is kyphosis of the spine. Sometimes for years there is excessive muscular strength and sexual power associated with slight giantism and acromegaly, but ultimately, in later middle life, muscular weakness and impotence supervene as the gland begins to lose its function.

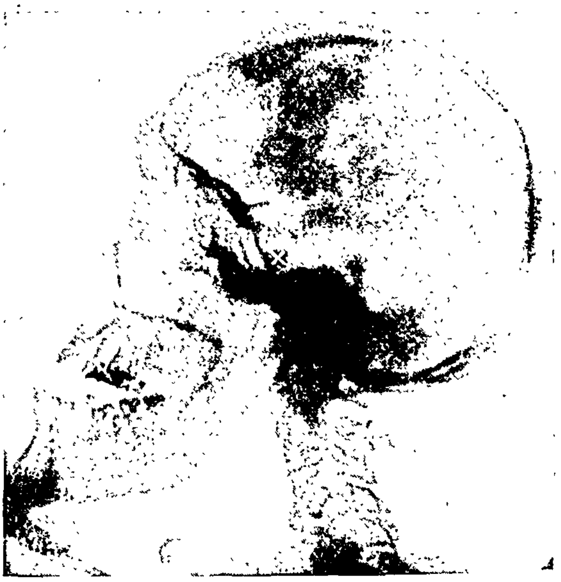

FIG. IV.—Lateral view of skull shown in Fig. III. The sella is much enlarged and the mandible hypertrophied and underhung. No affection of vision.

The general appearance in a well-marked case of the disease has suggested a reversion to anthropoid characteristics, and a radiogram (Fig. III.) of an anterior view of the skull of a patient shows the massive, almost gorilla-like, appearance of the facial bones. A lateral view of the skull (Fig. IV.) shows a much enlarged sella turcica due no doubt to the presence of a chromophile adenoma of the pituitary; yet the patient's vision has not suffered from any signs of pressure upwards on the optic chiasma. Drowsiness has been a feature in this case, due probably to interference by pressure with the function of the tuber cinerum above, and this patient has often missed his station by sleeping in the train, and even has fallen asleep playing cards. This symptom has improved under treatment with thyroid extract, and his neck has also become smaller; he formerly required a 19½ in. collar, and he takes size 8 in hats.

Pituitary Infantilism

Pituitary infantilism, due to arrest or nondevelopment of function of the anterior lobe, is one of the varieties of dwarfs, who are often perfectly formed, and they are not infrequently seen in circus side-shows, or on a music hall stage dressed in female garments and trained for singing and dancing.

Infantile characters persist in the treble voice, the absence of hairy development, and immature generative organs. Mentally also they are somewhat immature.

Very tiny people are sometimes met with, one of the smallest on record being Jeffery Hudson, only 18 in. high, in the service of the first Duke of Buckingham, who had him served up in a cold pie at a dinner given to Charles the First, and his Queen. Jeffery Hudson is recorded to have fought two duels, one with a turkey cock and another with a Mr. Crofts, whom he shot dead from horseback.

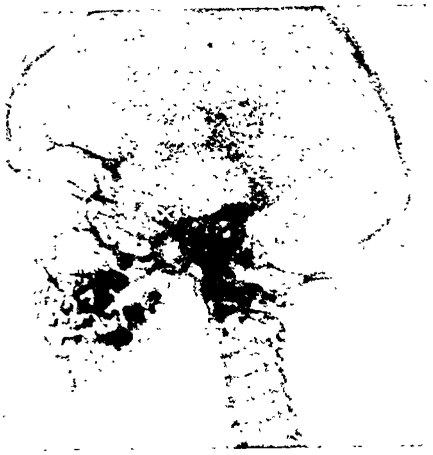

FIG. V.—Lorain infantilism due to cystic adamantinoma. Note "hammered metal" appearance of skull. Enlarged sella with calcareous deposits in tumour. Bitemporal hemianopia. This radiogram has been reduced to about a quarter of its width, but the sella is shown (natural size) in Fig. V.A on the Plate.

In another type of tumour of the anterior portion of the gland in infancy, known as adamantinoma, which grows from Rathke's pouch, the gland is degenerated from the first, and may become cystic as well as tumefied. In these cases the normal growth is inhibited, and the patient shows the well-known signs of infantilism, as described by Lorain, and by Fröhlich, obesity in the latter form being superadded to infantilism when the posterior lobe of the gland is also destroyed.

A typical case is a boy of 13, in whom, at operation, a large cystic adamantinoma of the pituitary was found enclosing a greenish fluid full of cholesterin. He stopped growing and began to put on fat two years ago, and lately at school, owing to complaints of his sight, his eyes were examined and papillœdema was found, for which reason he was sent to St. Mary's Hospital. Here we found typical bitemporal hemianopia, or blinker fields, and X ray (Fig. V.) (and V.A on Plate) of the skull showed an enlarged sella and evidence of a sellar tumour spreading upward, with calcareous deposits.

In this and other tumours of the anterior lobe of the pituitary there is a likelihood of pressure upwards and forwards against the optic chiasma, the lower decussating fibres therefore suffering first, with corresponding defects in vision, affecting primarily the upper quadrants. Scotomata will be bitemporal, though usually much more marked in one eye than the other, the initial visual defect being usually a peripheral scotoma in the upper temporal field of one eye only. As the disease advances and the pressure becomes greater on the optic fibres, the temporal scotoma increases, becoming quadrantic, and later involving the whole half field, while the temporal field in the opposite eye begins also to show defects, till at last complete bitemporal hemianopia, or blinker fields, becomes established. The hemianopic pupil, Wernicke's sign, has been described as present in such cases by several writers, but I was unable to demonstrate it in the boy described above, although his temporal fields were completely blind even to a brilliant light up to the midline and fixation point; his pupil reacted equally smartly from either direction. It is a very difficult sign to test for, as it is necessary to use a fine pencil of parallel rays of light so as to avoid illuminating the sclerotic or the side of the nose. I am not convinced that I have ever seen a hemianopic pupil reaction in a human patient, though I have seen it in a cat after dividing one optic tract. In contrast with Lorain infantilism are cases of achondroplasia, a form of dwarfism due to developmental defect in certain cartilage bones, especially the long bones. Such cases provide most of the Court dwarfs and jesters of history. Their wit and intelligence are normal and they are often strong and agile, and good gymnasts.

A man of 53, of just the same height as the boy, 52 in., has a large head, somewhat resembling the hydrocephalic or even acromegalic type, taking a 7¾ size hat. His limbs are very short, especially the legs, but the trunk is almost normal in development. There is no pituitary or other known glandular defect here, and no affection of vision.

In the early stage of pressure by a pituitary tumour, there is sometimes a paracentral scotoma developed, due to the macular fibres which decussate at the back of the under surface of the chiasma being pressed on. All varieties of visual field defect can be produced by pressure from these tumours. Sometimes the growth escapes through the diaphragma sellæ, and presses upon and may destroy completely one optic tract, causing homonymous hemianopia, or it may press forwards in front of the chiasma and produce partial or complete blindness of one eye only.

A patient who shows such a defect, affecting one eye only, (see Fig. VI.) is aged 65, and only four months ago noticed a defect in his right outer field. This does not seem to have got any worse, according to his own account, but on charting his visual fields I found a defect of the whole of the temporal field of the right eye, both upper and lower quadrants, the nasal field of the right eye and the whole field of the left eye being unaffected. Careful examination showed that there is a broad band of complete blindness in the upper part of the right lower quadrant running inwards to the fixation-point, whereas the upper quadrant and the rest of the lower quadrant can perceive an object, though the illumination is less bright than in the nasal field, and there is complete loss to colour in both quadrants of the temporal field. This is a very unusual distribution of field defect, to find such an extensive loss in the one eye only, with no trace of loss in the opposite eye. It might suggest a lesion of the optic nerve only in front of the chiasma, but X ray photographs (Fig. VII. on Plate) of his skull show great enlargement of the sellar turcica, with erosion of the posterior clinoids, demonstrating the presence of an intrasellar tumour. Nevertheless this patient is in perfect health, so far as he knows; there is no loss of strength, there is no headache, vertigo, nor any general signs of giantism or acromegaly. Yet the X rays show unmistakably the large skull and acromegalic appearance

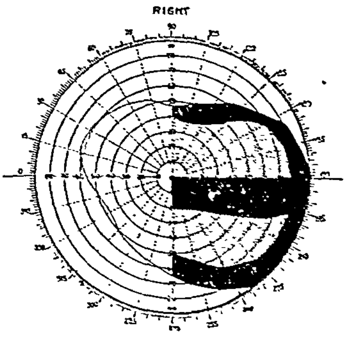

FIG. VI.—Latent acromegaly. Incomplete temporal hemianopia of right eye only. (The radiographic condition is shown in Fig. VII. on Plate.)

of the lower jaw, which is particularly massive, and provide clear evidence of a chromophile excessive activity in the anterior lobe. *The pituitary tumour in this case is probably a mixed type of adenoma, in which the majority of cells are of the neutrophile type, with only slight excess of the internal secretion of the anterior lobe.*

The chromophile and chromophobe types are the two common forms of pituitary adenomata, chromophobe being the more frequent of the two, though owing to the absence of giantism or acromegaly with these tumours, they are less notorious and perhaps less interesting in their general effects. The rarer basophile adenomata do not affect vision.

With regard to the treatment of these sellar tumours, administration of thyroid extract has been used, and some improvement has been observed both as regards the general symptoms and the visual fields, though usually only for a time; but the only certain improvement, or chance of cure, is by operation and the excision of the cyst and of its walls, or of the tumour, if not cystic. Cushing was one of the first to attack these tumours surgically, and he used the intranasal route, decompressing the sella turcica through the sphenoidal sinus. This route has, however, been entirely superseded by the transfrontal method, which is now one of the most satisfactory operations in cerebral surgery. The boy with Lorain infantilism was operated on by Mr. A. Dickson Wright and is making a good recovery, and his papillœdema is already improving, though there is no recovery yet in the temporal fields, and in my experience such recovery is unlikely. In his case papillœdema was commencing as a result of the general increase of intracranial pressure, but in the adult patient of to-day there seems to be no evidence of increase of intracranial pressure. His visual defect is possibly stationary, according to his own account, and he complains of no general symptoms of headache or discomfort, and, as he says himself, his age is 65, all these points being arguments against operative treatment. Should, however, his visual defect be found to increase in intensity, or headache or other symptoms of intracranial pressure develop, the present decision to postpone operation may have to be altered.

Cortical Visual Centres

The visual fibres pass from the optic tracts into nerve-cells in the external geniculate body, thence by a relay by the optic radiations spreading to the visual cortex in the occipital lobe, known as the area striata. Here the fibres end in the grey matter of the cortex almost entirely on the inner aspect of the occipital pole around the calcarine fissure, the area striata reaching forwards almost as far as the junction of the calcarine with the parieto-occipital fissure, and backwards as far as the occipital pole and slightly on the outer side of the lobe. The representation of the areas of the retinæ keep their position in optic nerve, chiasma, tract, radiations, and occipital cortex, so that fibres from the upper halves of the retinæ pass in the dorsum of the chiasma, thence in the dorsal portion of the optic radiations to the lower half of the cuneus and the upper lip of the calcarine fissure. The fibres from the lower halves of the retinæ pass along the under surface of the chiasma, along the ventral portion of the tract and geniculate body to the optic radiations, but here they make a curious bend outwards and forwards into the uncinate region of the temporal lobe, there spreading out over the tip of the descending horn of the lateral ventricle, before turning back along the inferior aspect of the ventricle to reach the inferior lip of the calcarine fissure and the lingual lobe. According to Holmes and Lister [4] and most writers on the subject, the calcarine fissure is the boundary line between the upper and lower quadrants. It is obvious, therefore, that the upper lip of the calcarine fissure and the lower portion of the cuneus is the cortical representation of the lower quadrants of the visual fields, which is by far the more important part of our vision. This area of the cuneus, calcarine fissure, lingual lobe, and occipital pole is known as the area striata, or the visuo-sensory area, and is marked out by the whitish line of Gennari, which corresponds to the optic radiations.

Numerous instances of injury to the occipital lobe, such as gunshot wounds during the war, go to prove that the macula is represented at the tip of the occipital pole, lesions limited to this area causing a paracentral scotoma only, the peripheral portion of the field being unaffected. Furthermore, it would appear that concentric layers forwards of the calcarine area represent concentric areas of the visual fields towards the periphery. There is also evidence that the horizontal levels of the fields are represented in the cortex of the depth of the calcarine fissure, while the vertical bands are represented on the mesial surface of the area striata.[4]

A peripheral area of vision in the field may remain when there is a large paracentral scotoma spreading from the fixation-point out near to the periphery. This would indicate a damage to the occipital pole of the posterior portion of the cuneus and lingual lobe, with some escape of the anterior portion of the visual centre. The curve outwards of the lower portion of the optic radiations into the temporal lobe is the cause of partial hemianopia being sometimes found in association with temporal tumours, careful perimetric fields showing scotomata in the upper quadrants, especially in the nasal field of the eye on the side of the lesion.[5] Owing to the sweep of the dorsal portion of the optic radiations close beneath the parietal cortex, a lesion here is apt to catch these optic radiations and may produce either complete hemianopia or a quadrantic lesion of the lower fields.

Complete destruction of the half vision centre in the occipital area causes total hemianopia, the blind area reaching to the fixation-point, and it seems certain that the macula is not specially bilaterally represented. Partial lesions may cause only partial loss of vision of a hemianopic type, and the grosser forms of vision, such as perception of light and movement, may persist scarcely altered, but the recognition for shape and form may be very deficient, and colour completely lost in the damaged fields. In slighter cases still, shape and form and general illumination may be scarcely affected, though the recognition of colour may be abolished in the blind halves, a hemiachromatopsia. It seems as though the functions of the visual cortex may be divided into light, movement, form, and colour, in progressive order of elaboration, a slight lesion abolishing mainly colour perception, whereas perception of light and movement may persist even with considerable damage. Since colour tests stimulate by only one narrow band of wave length, it is not difficult to understand that a slight lesion of the centre will abolish colour perception, while the coarser stimuli of ordinary light, form, and movement, involving the whole octave of the spectrum, will still evoke responses, though they also are diminished in intensity. For this reason the colour test is much more delicate and easily applied than tests of the field dependent on the recognition of very small white objects, though it is, of course, necessary to be sure that the patient is not congenitally red or green blind. When colour sense is lost, there is probably always some diminution of form sense if a sufficiently small test object is used, such as one measuring 0·3 mm. I find colour testing very useful and rapid in neurological perimetric work, using Gowers' method [6] instead of a perimeter. The test objects I use are two beads, bright red and green, fixed on the ends of a black steel rod about 12 in. in length.

Flicker is an intermittent stimulus, and may be compared to movement of a test object as a stronger stimulus than a stationary object. Anyone who has driven along a road when a low sun is shining through palings across the road will appreciate the intensity of flicker as a stimulus. At high speeds flicker becomes fused to a constant stimulus of steady light. Thus an alternating current supply for electric lighting must have a periodicity of not less than 40 cycles per second, or flicker will become noticeable. The rate of fusion for flicker becomes lowered in lesions of the optic fibres, and tests to determine this rate may be used for comparison of the visual acuity of the quadrantic fields in pituitary lesions, or in other causes of partial hemianopia.

The onset of hemianopia, due to thrombosis of the calcarine artery, may be accompanied by xanthopsia. One of my patients with hyperpiesis developed right hemianopia when in Lincoln cathedral, seeing everything bathed in a golden light for some minutes before her vision failed. Holmes also quotes a case of a woman with occipital lesion, who saw golden crosses and figures.

Word Blindness, Visual Orientation, and Stereoscopic Perception

The angular and supramarginal gyri have definite functions concerned with visual perception and understanding. On the left side of the brain in right-handed people, there is an area called the angular gyrus, whose function is perception and memory retention of written speech, and lesions in this centre may cause inability to read and write. Lesions in the neighbourhood of this centre on the left side may also produce *visual agnosia*, a condition in which objects seen are not recognised until they are handled. The optic radiations run very close beneath this centre, and it is owing to this fact that David Ferrier made the mistake sixty years ago of asserting that this was the cortical centre for vision, as he found that destructive lesions of this centre produced blindness of the opposite eye in animals. It was not until Sharpey Schafer demonstrated that injuries carefully limited to the grey matter in this area did not appreciably affect vision, that it was realised that the blindness produced by Ferrier was due to injury of the closely underlying optic radiations.

Another interesting fact associated with lesions of the optic radiations at this level on the left-hand side is that it produces word-blindness. A localised lesion at this level beneath the cortex, without damaging the actual angular gyrus cortex itself, will produce complete inability to read, though the patient can write freely. Hence we have the curious phenomenon that the patient may write freely and at large, but cannot read a word as soon as he has written it. Such patients always have right hemianopia in addition. This condition, due to a localised vascular lesion, thrombotic or hæmorrhagic, and usually in older persons, is not to be confounded with congenital word-blindness, in which the visual word centre in the angular gyrus does not appear to develop its normal function. Certain school-children have been found who never learned to read, though they may show normal intelligence in other respects.

Bilateral lesions of the supramarginal gyri have been shown to produce apraxia of the limbs, or an inability to perform simple movements, and a disturbance of vision in which the relative sizes and distance of objects is not appreciated, in which the visual attention is poor and orientation faulty, so that a patient thus afflicted has the utmost difficulty in finding his way across a room past simple obstacles such as chairs, even though he sees them quite well. Two cases have been described in which there was complete loss of stereoscopic perception of depth, everything appearing flat and bidimensional.

One case described by Riddoch [7] of a gunshot wound through the left frontal area, the bullet finally coming to rest close to the right calcarine fissure, gave rise to a left hemianopia with incomplete recovery of the lower fields. In addition to considerable sensory loss on his right hand, the patient had complete loss of *stereoscopic* perception of depth, all objects appearing flat and bidimensional, so that he had great difficulty in recognising faces, and he also had loss of visual orientation with complete inability to judge distances.

Riddoch does not explain the condition, but it was clearly not due to any loss of function of the right occipital cortex, as the stereoscopic defect applied to all the undamaged fields. The stereoscopic loss was possibly due to a bilateral lesion of the longitudinal fibres connecting the occipital and frontal lobes, and to an intellectual loss of power of fitting the two half fields together, comparable to apraxia of the hands. Holmes [8] published a similar case amongst his eight cases of loss of visual orientation in supramarginal gyrus lesions.

Visuo-psychic Centre

Irritative lesions of the calcarine area, such as may occur in migraine, or in adhesions of old meningitis, which may set up epileptic seizures, may be preceded by low-grade visual spectra, such as flashing red and green lights, or the fortification spectrum of migraine. It is practically certain, therefore, that irritative lesions of the occipital half-vision centre do not produce the elaborate images of intellectual vision, but that these must be formed elsewhere by redistribution of stimuli from the occipital cortex.[10] Such a visuo-psychic centre may be in the upper portion of the cuneus, the fusiform gyrus,[5] and on the outer side of the occipital cortex, but there is very little definite knowledge, except that electric stimuli to this area will produce movements of the eyes. Without doubt, visuo-psychic perceptions are ultimately concerned with the frontal lobes.

Visual Hallucinations

Visual hallucinations are well-known phenomena in delirium tremens and in other insanities, but are especially liable to occur when there is a lesion of the visual apparatus. This may be anywhere between the eye itself and the area striata in the occipital cortex, and the hallucinations are liable to be referred to the blind fields only when the lesion affects the optic tract, geniculate body, optic radiations, or calcarine cortex. My own view [9] is that high-grade hallucinations cannot possibly be elaborated in the half-vision centre in the calcarine area. This centre, as a sensory centre, no doubt corresponds to Hughlings Jackson's " middle level " of the motor representation of the limbs and trunk, the so-called " motor " area. Low-grade visual sensations, such as red and green lights, or the fortification spectrum of migraine, are probably originated by a discharging lesion in the area striata, such as areas of softening, but complex visual phenomena are probably no more originated there than are complex purposive movements originated in the "motor" limb centres. The visuo-psychic area must have a large share in their production, though such action may be set up reflexly by peripheral irritation of the optic path. For this purpose we may consider the area striata to be part of the periphery, which includes the eye and retina and the whole course of the optic fibres. The peripheral disease merely determines the localisation of the spectral hallucinations which in disease of one eye are referred only to the visual field of that eye, whereas in disease of one optic tract, or of the radiations or the area striata, they are referred to the corresponding half fields.

Numerous cases have been described of visual hallucinations seen in the blind fields in patients suffering from hemianopia, due to various lesions from optic tract to occipital cortex. The visions may be of people or animals, usually in the periphery of vision, standing or moving. In a case of my own[10] following a fit with left-sided convulsions, the patient described very elaborate visions of people in wheel chairs dressed in brilliant garments of green and gold, passing from the left periphery to the midline. In occipital tumours similarly, hallucinations have been described, but more particularly these have been observed in cases of temporal tumour.

In the case of right temporal tumour of Cushing's,[11] with left upper quadrantic field defect, referred to by Horrax,[12] a young man, subject to uncinate attacks, had a recurring visual hallucination on his left side in which he saw his father sitting at a table playing cards, and quarrelling with some other men, the patient always exhibiting signs of fear and horror. Subconscious memory was apparently not responsible for this aura, as he had never seen his parent in such a position, nor did his father ever play cards.

The probability is that here also the visual hallucinations are produced reflexly through irritation of the optic radiations acting through the connexions of the occipital cortex with the visuo-psychic and frontal centres.

Transient Hemianopia and Macular Centre

Temporary exhaustion paralysis of the half-vision centre on one side may occur, and does occur commonly in migraine possibly due to vaso-motor spasm of the calcarine branches of the posterior cerebral arteries causing temporary anæmia of this area. Temporary hemianopia is a common symptom in many cases of migraine, and it may be associated with the low-grade visual aura known as the scotoma scintillans, or fortification spectrum. Very occasionally this hemianopia has been known to remain permanent, possibly due to non-dilatation and thrombosis of the calcarine vessel following the primary spasm in the artery.

A similar exhaustion paralysis of the half-vision centre may be produced by an irritative discharging focus, as a cyst or area of softening, in the neighbourhood, as in the precuneus or quadrate lobe, when epileptic fits may be succeeded by complete hemianopia lasting perhaps 24 hours. In such cases, if examined fairly early, it will be found that the hemianopia is absolute, a bright flame not being seen until it reaches the fixation-point. All these cases of hemianopia when they clear up, clear up from the centre towards the periphery. A point over which there has been much controversy in the past is the representation of the macula in the cortex, and it has been suggested that the whole of it is bilaterally represented. I proved many years ago, in 1897,[6] that exhaustion hemianopias are absolute up to the middle line and fixation-point, and the numerous cases of war wounds damaging the occipital cortex have gone further to prove that there is no special bilateral representation of the macula. Yet numerous cases show hemianopia fairly complete up the middle line, except for the exclusion of a small area leaving the fixation-point in the seeing field. This is probably due to the fact that the macula is represented at the occipital pole and slightly on the outer side on the occipital cortex close to the junction of the arterial supply where the middle cerebral and posterior cerebral vessels meet, and the escape of the macular area is probably due to an alternate supply thus reaching it from the terminations of the middle cerebral vessels.

A man, aged 70, was attacked by severe headache and gross disturbance of vision. When admitted to hospital he was found to have complete left hemianopia and no other abnormal symptoms. The blindness of the left half fields was still absolute three weeks after the onset. The lesion was probably a thrombosis of the calcarine branch of the posterior cerebral artery, and it is quite probable that if he were to be tested carefully six or twelve months later, it would be found that a small area around the fixation-point would then be included in the seeing half field, due to partial recovery of the macular centre at the occipital pole, owing to the alternative blood-supply.

Double Hemianopia

A bilateral lesion, therefore, of the occipital cortex, if it is not destructive, such as by gunshot wound, but due to cerebral thrombosis, will show at first complete blindness, a double hemianopia, with subsequent recovery of a small area of central vision of about 5° around the fixation-point, resembling in appearance the well-known pin-point fields of hysteria. The vision differs from that of the hysteric in that in the organic case there is very marked loss of power of orientation, as the loss of peripheral vision is real and not psychical; in them there is no visual reflex from the periphery, and consequently the patient is much disturbed with regard to his own position and the position of objects in space. His vision may in fact be compared to that of a normal individual looking through two parallel tubes held close up against each eye.

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UNIVERSITY COLLEGE HOSPITAL.—The Duke of Kent, president of the hospital, was in the chair at the centenary banquet held at the Guildhall on May 2nd in support of the appeal for £250,000 to provide a new pay-bed hospital and nurses' home, and for extensions to the antenatal and infant welfare departments. In replying to the toast of the hospital, proposed by the Duke, Sir Herbert Samuelson, chairman and treasurer, said that of late years they had concentrated on antenatal and child welfare work, and they could boast that they never lost sight of a child born within their portals until he had attained the age of twelve. Donations amounting to £22,882 have been received, including £1000 from the Duke's wedding fund and £7500 from Sir H. Samuelson.

ÆTIOLOGY OF ACUTE RHEUMATISM

EXPERIMENTAL EVIDENCE OF A VIRUS AS THE CAUSAL AGENT

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WITH A NOTE ON PHOTOMICROGRAPHS ON SPECIAL PLATE
by J. E. Barnard, F.R.S.

The view that rheumatic fever is of microbic origin was first formulated in the later part of the nineteenth century. Following Mantle's description in 1887 of a diplococcus that he had isolated from the blood of patients with acute rheumatism many reports concerning the bacteriology of the disease were published. The belief that streptococci are ætiologically related to the disease was mainly founded on the work of Triboulet and Apert in 1898, and on that of Westphal, Wassermann, and Malkoff in 1899. In this country the researches of Poynton and Paine in 1900 were the first to awaken interest in the bacteriology of the rheumatic disease. Their conclusions gave rise to a lengthy and world-wide controversy which has continued to the present day. Although it is now universally recognised that hæmolytic streptococci play an important part in the ætiology, the evidence that has accumulated during the past 35 years still fails to provide conclusive evidence that these organisms represent the causal agent. It is unnecessary to review here the extensive literature on which this statement is based. Detailed critical reviews by Wright (1929) and Gibson and Thomson (1933), which include a consideration of the allergic theories advanced by some modern writers, are readily available, and to these the reader is referred. It therefore appears to be fair to state that the cause of rheumatic disease is still not definitely known.

The demonstration of a virus as the causal agent of acute rheumatism has been attempted by several investigators.

De Vecchi (1912) reported the production of a myocarditis which he regarded as similar to that of rheumatic fever by the inoculation into rabbits, dogs, rats, and mice of bacteria-free blood obtained from patients suffering from rheumatic fever. These observations were partially confirmed by Natali (1923). Attempts by Miller (1924) to repeat the experiments recorded by these workers were unsuccessful. Rabbits and guinea-pigs were inoculated with whole blood, serum, joint fluid, pleural exudate, throat washings, and suspensions of tonsillar tissue. The inocula were in every case bacteriologically sterile. Out of a total of 107 animals inoculated 2 developed an acute non-bacterial arthritis. In about half the rabbits and two-thirds of the guinea-pigs myocardial lesions were encountered which consisted of interstitial accumulations of lymphocytes and endothelial cells. Similar lesions, however, were observed in control animals, and it was therefore concluded that the experiments described by the Italian workers were inconclusive. Gross, Loewe, and Eliasoph (1929) have reported an extensive series of somewhat similar experiments in which seven different species of animals were tested. The results were entirely negative.

These unsuccessful experiments do not necessarily imply that a virus is not the cause of rheumatism; they merely show that the animals tested are not susceptible to inoculation. As is well known, quite a number of virus diseases have not yet been successfully transmitted to species other than that of the natural host, though some remarkable advances have been made in this direction in recent years.

In The Lancet last week (Schlesinger, Signy, and Payne, 1935) it was suggested that the infection with hæmolytic streptococci, by producing a condition of increased tissue susceptibility, enabled some as yet undiscovered causal agent to enter the body, or allowed such an agent already lying latent in the body to assume active characters. It was further suggested that this causal agent might be of the nature of a virus. In the present paper the results of an attempt to obtain experimental evidence in favour of this hypothesis are recorded.

One of us, B. S., was responsible for the clinical part, and A. G. S. for the clinical pathology of the investigation now to be described. The examination of rheumatic exudates and the agglutination tests with the antigens obtained from these were performed at the Lister Institute by C. R. A., who is alone responsible for this part of the work.

Methods Employed

It has already been mentioned that the results of inoculating animals with rheumatic joint fluids, &c., have been unsatisfactory. It seemed desirable therefore to employ a technique whereby a preliminary concentration of the causal agent could be obtained. One possible method of doing this was to submit rheumatic exudates or suspensions of infected tissues to high-speed centrifugation in the hope that the agent would be deposited in the sediment so obtained. The high-speed centrifuge has been used successfully for this purpose in the study of several virus diseases, including vaccinia (Eagles and Ledingham, 1932), psittacosis (Bedson, 1933), trachoma (Thygeson, 1934), varicella and zoster (Amies, 1933, 1934). Only those virus agents of which the infective particles are relatively large (100–200 mμ) are susceptible to the degree of centrifugal force developed by the high-speed machines at present available. It was realised therefore that this method would only be successful if the rheumatic agent were of this order of size.

Search for Elementary Bodies in Rheumatic Exudates

It seemed reasonable to assume that the most active and extensive inflammatory lesions would contain the causal agent in greatest amount. For this reason, the majority of the cases chosen for study were examples of very acute infections that had rapidly progressed to a fatal termination. In 4 of the 7 cases examined, the duration of the pericarditis had been under five weeks. At the post-mortem examination each of these revealed a pericarditis with the typical "bread and butter" appearance. In one case death had occurred rapidly from acute carditis and, although a pericardial effusion was found, there was no evidence that the pericardium itself was involved. Histological examination showed widespread collections of Aschoff nodes throughout the myocardium and cardiac valves, and also in other areas of the body. In the three remaining cases the pericarditis was of a more chronic character, and firmer adhesions or almost total obliteration of the pericardium were encountered at autopsy. Pneumonia of the type that many authorities now recognise as specific in rheumatism was present in 6 of these 7 cases.

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[*] Working with a grant from the Harmsworth Fund.

The pericardial fluid was removed with aseptic technique within twelve hours of death.

After carefully sterilising the skin over the precordium a needle was inserted in the second left intercostal space close to the sternum, with the cadaver in a propped-up position. The fluid was then withdrawn with a syringe and transferred to a tube containing a few cubic centimetres of a 3·8 per cent. solution of sodium citrate. In three cases in which there were extensive pericardial adhesions this method proved unsuccessful, and the fluid was then obtained after the thorax had been opened, the surface of the pericardium being sterilised with a searing iron before insertion of the needle.

Samples of pleural fluid, if present, were obtained in the same manner. Each specimen was tested for sterility by cultivation in 10 per cent. serum broth for 72 hours. The pericardial fluids proved to be sterile in every case.

The pericardial fluid thus obtained was then submitted to a process of fractional centrifugation similar to that employed for obtaining elementary body suspensions from varicella and zoster vesicle fluids (Amies, 1934). The exudate was first centrifuged for 20 minutes at 2000 revolutions per minute to remove cell debris. The clear supernatant fluid was transferred to fresh tubes and again centrifuged at a speed of 12,000–14,000 r.p.m. for 30 minutes. This yielded a small deposit, just visible to the naked eye. The supernatant fluid was removed and discarded, and the sediment was rubbed off the bottom of the tube with a glass rod, resuspended in physiological saline and again deposited by means of the high-speed centrifuge. Finally, the washed deposit was suspended in physiological saline containing 0·25 per cent. of formalin and centrifuged lightly to remove any imperfectly dispersed material. The suspension thus prepared had a bluish opalescent appearance and showed no tendency to spontaneous flocculation.

MICROSCOPIC EXAMINATION OF SUSPENSIONS

When a drop of the suspension was examined under the microscope, using the dark-ground method of illumination and a magnification of 1000 diameters, it was found to contain numberless small particles. This, of course, was to be expected. Slight differences in the size and refractility of these particles was observed, and it was recognised that many of them were probably minute fragments of cell protoplasm such as occur in any pathological fluid. In addition to these, however, there were other particles of uniform size which, in the light of previous experiences with other virus diseases, appeared closely to resemble elementary bodies. Several methods of preparing stained films of these suspensions were tried. Loeffler's method of staining flagella and the modified techniques of Zettnow and Cassares-Gil gave satisfactory results. In such preparations it was again possible to identify particles of uniform size. In the case of one of the pericardial fluids examined it was possible by repeated fractional centrifugation to obtain an almost pure suspension of these bodies whose appearance, both under dark-ground illumination and in stained preparations, was quite definite.

Pleural exudates were present in 5 of these 7 cases. Four of these were submitted to high-speed centrifugation, and numerous bodies similar to those found in the pericardial fluids were recognised in one of the deposits so obtained. Details of the seven cases examined with the results obtained in each are given in Table I.

In order to provide adequate controls for this investigation 8 pericardial exudates and 2 pleural exudates obtained from non-rheumatic conditions were centrifuged at high speed in exactly the same manner as that described above. These control fluids yielded small deposits from which fairly stable suspensions could be prepared. These also showed large numbers of particles of varying size and refractility, but the bodies of uniform size and characteristic appearance seen in the rheumatic pericarditis suspensions were absent.

PHOTOMICROGRAPHY

Note by J. E. BARNARD

The photomicrographs accompanying this paper are of material supplied by the authors.

FIG. I.—Agglutinated suspension in hanging drop under ordinary dark-ground illumination. Objective used 16 mm. apochromat. (× 70.) Transmitted light.

FIG. II.—Agglutinated suspension mounted on quartz slide and somewhat compressed between slide and cover-glass to show the probable virus bodies immersed in a granular matrix. The photomicrograph was taken in ultra-violet light by the dark-ground method devised at the National Institute for Medical Research. It will be seen that the probable virus bodies have a different refractive index in the wave-length used to that of the matrix; the latter is substantially less visible. This difference is detectable in visible light if a high aperture dark-ground illumination method is used, but it would be difficult and perhaps impossible to obtain satisfactory photomicrographs under those conditions. Objective used 1·7 mm. quartz monochromat. with an effective N.A. of 2·5 in the wave-length used. (× 1000.)

FIG. III.—Unagglutinated suspension of centrifuged deposit. The method adopted was substantially the same as that described in the identification of virus bodies in infectious ectromelia (Barnard, 1932). As only one sample was available for photography no claim is made that anything like a conclusive result has been obtained, but it is suggestive. The deposit apparently consists of virus bodies with a considerable proportion of tissue debris. The suggestion that some at least are virus is dependent on regularity of size and constancy of refractive index in all wave-lengths that have been used. Further, single bodies are seen which are elongated and suggest that transverse binary fission is taking place. The size of the virus can hardly exceed 100 mμ and may be as small as 80 mμ, but the latter dimension is difficult to determine with any accuracy unless photomicrographs are taken in a shorter wave-length than that used. (× 3200.)

FIG. IV.—Streptococcus photographed under similar conditions as Fig. III. and at exactly the same magnification for purposes of comparison.

DRS. SCHLESINGER, SIGNY, AND AMIES:

ÆTIOLOGY OF ACUTE RHEUMATISM

PHOTOMICROGRAPHS BY

MR. BARNARD

(Described on opposite page)

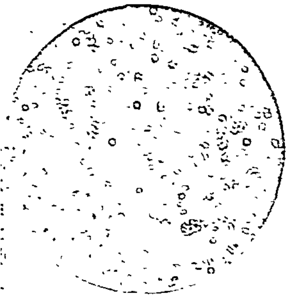


FIG. I.

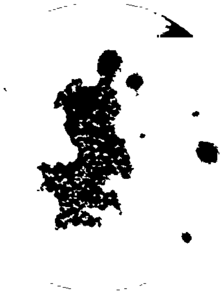


FIG. II.

FIG. III.

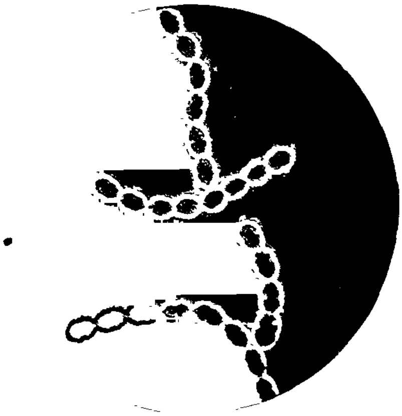
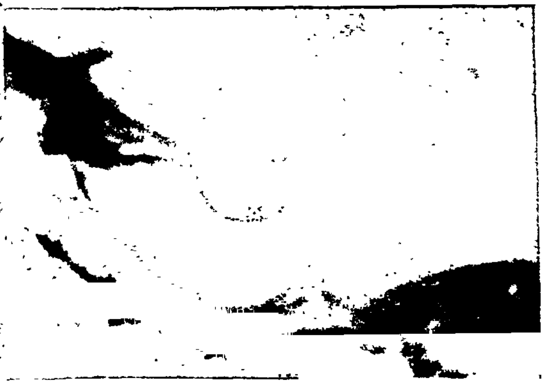


FIG. IV.

DR. HARRIS: VISION IN RELATION TO CEREBRAL LESIONS



. I.—Radiogram of normal sella turcica. In this and ubsequent Figures a cross indicates the bottom of the sellar epression.

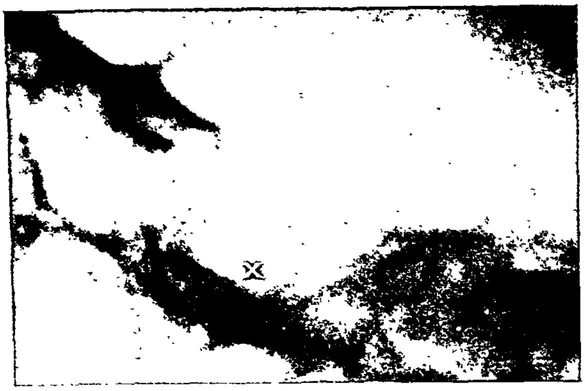
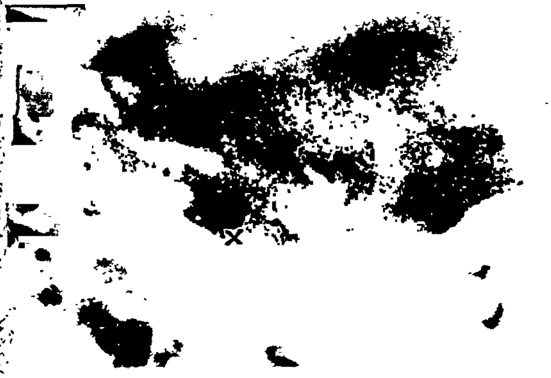


FIG. II.—Erosion of sella by distension of third ventricle in hydrocephalus due to tumour in posterior fossa.



VI.—Sella of skull shown in Fig. V. (in text). Cystic

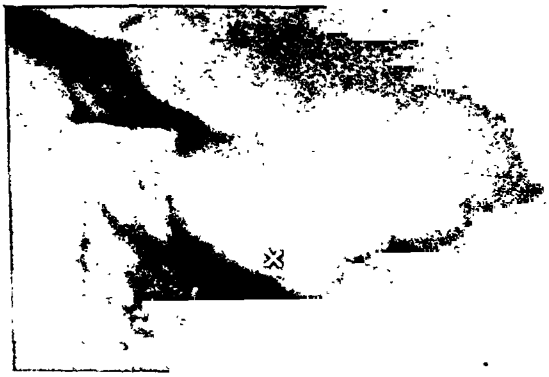


FIG. VII.—Latent acromegaly, with enlarged sella. The visual

character, and firmer adhesions or almost total obliteration of the pericardium were encountered at autopsy. Pneumonia of the type that many authorities now recognise as specific in rheumatism was present in 6 of these 7 cases.

The pericardial fluid was removed with aseptic technique within twelve hours of death.

After carefully sterilising the skin over the precordium a needle was inserted in the second left intercostal space close to the sternum, with the cadaver in a propped-up position. The fluid was then withdrawn with a syringe and transferred to a tube containing a few cubic centimetres of a 3·8 per cent. solution of sodium citrate. In three cases in which there were extensive pericardial adhesions this method proved unsuccessful, and the fluid was then obtained after the thorax had been opened, the surface of the pericardium being sterilised with a searing iron before insertion of the needle.

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The pericardial fluid thus obtained was then submitted to a process of fractional centrifugation similar to that employed for obtaining elementary body suspensions from varicella and zoster vesicle fluids (Amies, 1934). The exudate was first centrifuged for 20 minutes at 2000 revolutions per minute to remove cell debris. The clear supernatant fluid was transferred to fresh tubes and again centrifuged at a speed of 12,000–14,000 r.p.m. for 30 minutes. This yielded a small deposit, just visible to the naked eye. The supernatant fluid was removed and discarded, and the sediment was rubbed off the bottom of the tube with a glass rod, resuspended in physiological saline and again deposited by means of the high-speed centrifuge. Finally, the washed deposit was suspended in physiological saline containing 0·25 per cent. of formalin and centrifuged lightly to remove any imperfectly dispersed material. The suspension thus prepared had a bluish opalescent appearance and showed no tendency to spontaneous flocculation.

MICROSCOPIC EXAMINATION OF SUSPENSIO

When a drop of the suspension was exa under the microscope, using the dark-ground m of illumination and a magnification of 1000 diame it was found to contain numberless small parti This, of course, was to be expected. Slight di ences in the size and refractility of these partic was observed, and it was recognised that many them were probably minute fragments of cell proto plasm such as occur in any pathological fluid. In addition to these, however, there were other particles of uniform size which, in the light of previous experiences with other virus diseases, appeared closely to resemble elementary bodies. Several methods of preparing stained films of these suspensions were tried. Loeffler's method of staining flagella and the modified techniques of Zettnow and Cassares-Gil gave satisfactory results. In such preparations it was again possible to identify particles of uni size. In the case of one of the pericardial fl examined it was possible by repeated fractional centrifugation to obtain an almost pure suspensi of these bodies whose appearance, both under dark-ground illumination and in stained preparations, was quite definite.

Pleural exudates were present in 5 of these 7 cases. Four of these were submitted to high-speed centrifugation, and numerous bodies similar to those found in the pericardial fluids were recognised in one of the deposits so obtained. Details of the seven cases examined with the results obtained in each are given in Table I.

In order to provide adequate controls for this investigation 8 pericardial exudates and 2 pleural exudates obtained from non-rheumatic conditions were centrifuged at high speed in exactly the same manner as that described above. These control fluids yielded small deposits from which fairly stable suspensions could be prepared. These also showed large numbers of particles of varying size and refractility, but the bodies of uniform size and characteristic appearance seen in the rheumatic pericarditis suspensions were absent.

PHOTOMICROGRAPHY

Note by J. E. BARNARD

The photomicrographs accompanying this paper are of material supplied by the authors.

FIG. I.—Agglutinated suspension in hanging drop under ordinary dark-ground illumination. Objective used 16 mm. apochromat. (× 70.) Transmitted light.

FIG. II.—Agglutinated suspension mounted on quartz slide and somewhat compressed between slide and cover-glass to show the probable virus bodies immersed in a granular matrix. The photomicrograph was taken in ultra-violet light by the dark-ground method devised at the National Institute for Medical Research. It will be seen that the probable virus bodies have a different refractive index in the wave-length used to that of the matrix; the latter is substantially less visible. This difference is detectable in visible light if a high aperture dark-ground illumination method is used, but it would be difficult and perhaps impossible to obtain satisfactory photomicrographs under those conditions. Objective used 1·7 mm. quartz monochromat. with an effective N.A. of 2·5 in the wave-length used. (× 1000.)

FIG. III.—Unagglutinated suspension of centrifuged deposit. The method adopted was substantially the same as that described in the identification of virus bodies in infectious ectromelia (Barnard, 1932). As only one sample was available for photography no claim is made that anything like a conclusive result has been obtained, but it is suggestive. The deposit apparently consists of virus bodies with a considerable proportion of tissue debris. The suggestion that some at least are virus is dependent on regularity of size and constancy of refractive index in all wave-lengths that have been used. Further, single bodies are seen which are elongated and suggest that transverse binary fission is taking place. The size of the virus can hardly exceed 100 mμ and may be as small as 80 mμ, but the latter dimension is difficult to determine with any accuracy unless photomicrographs are taken in a shorter wave-length than that u (× 3200.)

FIG. IV.—Streptococcus photographed under similar conditions as Fig. III. and at exactly the same magnification for purposes of comparison.

No attempt was made to measure the size of these particles since the methods commonly employed for this purpose (ultrafiltration and ultracentrifugation) require the use of a susceptible laboratory animal. It is sufficient, therefore, to state that the bodies found in suspensions obtained from rheumatic pericardial fluid were distinctly smaller than vaccinia elementary bodies when examined under the same optical conditions. It is fully realised that the utmost caution must be used in interpreting the results of microscopical examinations of this kind. We believe, however, that these findings can be regarded as significant when taken in conjunction with the other experimental evidence now to be described.

TABLE I

Case.	Clinical condition—			Duration of illness.	Elementary bodies in fluids from—	
	Pericarditis.	Carditis.	Pneumonia.		Pericardium.	Pleura.
1	Acute.	+	+	2 weeks.	+	No effusion.
2	None.	+	+	3 ,,	+	Contaminated.
3	Acute.	+	+	4 ,,	+	0
4	,,	+	+	5 ,,	+	+
5	,,	+	0	3 ,,	+	0
6	Subacute.	+	+	3 ,,	+	No effusion.
7	Chronic.	+	+	Several months.	0	0

Except in Case 4 post-mortem examinations were performed and the clinical condition was thereby confirmed.

Agglutination of Suspensions Obtained from Pericardial Exudates

It has already been shown in a number of virus diseases that elementary bodies which on other grounds are regarded as the causal agents are specifically agglutinated by the corresponding antisera. This phenomenon was first described by Ledingham (1931) in the case of vaccinia and fowl-pox, and has since been demonstrated in varicella and zoster (Paschen, 1933; Amies, 1933). Such agglutination reactions provide additional evidence in favour of the view that elementary bodies represent the actual infective agents, and at the same time they form a useful method for studying the development of immunity to the virus in question. The application of this method of investigation to the present problem was obviously indicated. The results of preliminary experiments were encouraging and the method has now been given a fairly extensive trial.

The technique of preparing the suspensions has already been described. Owing to the small amount of antigen available it was necessary to employ a microscopic method of carrying out the agglutination tests.

Mixtures consisting of equal volumes of the antigen suspension and an appropriate dilution of the serum to be tested were set up as hanging drops, using an aluminium ring moist chamber in preference to a hollow-ground slide which is too shallow for this purpose. Each serum was usually tested in a series of falling dilutions from 1 in 4 to 1 in 128. Controls consisting of antigen with normal serum and antigen with saline were included in each test. The preparations were allowed to remain at room temperature (average 65° F.) and examined after 24, 48, and 72 hours. At these intervals the preparations were examined microscopically with transmitted light, using a 16 mm. objective and a ×10 ocular. A positive reaction was indicated by the appearance of small, irregularly shaped, highly refractile floccules. These were usually visible 24 hours after setting up the tests, but their appearance was sometimes delayed to 48 hours. The control preparations, consisting of antigen and normal serum or saline, appeared perfectly clear when examined under the same conditions.

In order to determine the nature of these floccules the hanging drop was transferred to a clean slide and examined by dark-ground illumination. It was then evident that the floccules consisted of aggregates of the small bodies of uniform size already identified in the pericardial suspensions.

RESULTS OBTAINED

The agglutination reaction as described above has been carried out on the sera obtained from 36 patients suffering from rheumatic disease, all of whom showed well established cardiac involvement. The series included acute, convalescent, and quiescent cases. A clear definition of these terms is necessary, since the results obtained with the agglutination test were found to depend on the degree of activity of the rheumatic process. An *active* infection was recognised by the presence of two or more of the following: pyrexia, tachycardia, extension of the cardiac signs, the presence of subcutaneous nodules, and failure to gain in weight. Significance was also attached to an increased erythrocyte sedimentation-rate, and no case was considered to be free from active rheumatism until the sedimentation-rate had fallen to a normal figure. Patients were regarded as *convalescent* when they had recently passed through a stage of acute rheumatism while under our personal supervision. In some of these patients, pericarditis, subcutaneous nodules, and arthritis had been present during the acute phase, while in others the presence

TABLE II

Agglutination Reactions with Rheumatic Suspensions and the Sera of Patients with Rheumatic Cardiac Disease

Serial No.	Suspension employed.	Agglutination titre of serum.	Clinical notes.
1	3 & 4	1/32	Active, nodules.
	4	1/32	8 weeks later.
	3 & 4	1/16	3 weeks later, acute pericard.
2	3	1/16	Active, nodules.
	4	1/32	6 weeks later, active, nodules.
3	2, 3, 4	1/32	Active, nodules.
	2	1/16	2 weeks later, active.
	4 & 5	1/64	3 months later, acute pericard., pleurisy.
4	3	Neg.	Active, nodules.
	4	1/8	2 weeks later, active.
5	4	1/16	Active, nodules.
6	4 & 5	1/32	,, ,,
7	3, 4, & 6	1/16	,, ,,
8	6	Neg.	Acute pericarditis.
	4	,,	2 weeks later; died a few days later.
9	4	,,	Subacute pericarditis, nodules.
	4	,,	1 week later; died a few days later.
10	4	,,	Active, nodules.
11	3 & 6	1/32	Convalescent.
12	,,	Neg.	,,
13	,,	,,	,,
14	,,	1/16	,,
15	3, 4, & 6	Neg.	,,
16	3	,,	Convalescent; recent nodules.
17	3	,,	Convalescent.
18	4	,,	Convalescent; recent nodules.
19	2	,,	Convalescent; recent pericard.
20	2	,,	Convalescent.
21	3	,,	Quiescent.
22	2	,,	,,
23	3	1/8	,,
24	3	Neg.	,,
25	3	1/4	,,
26	3	Neg.	Quiescent; recent tonsillitis.
27	6	,,	,, ,, ,,
28	3 & 6	,,	,,
29	,,	,,	,,
30	,,	,,	,,
31	,,	,,	,,
32	,,	,,	,,
33	,,	,,	Quiescent; recent tonsillitis.
34	,,	,,	,,
35	,,	,,	,,
36	,,	,,	Quiescent; recent tonsillitis.

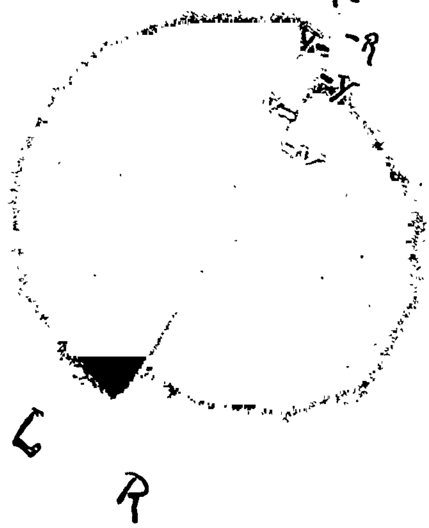
The number assigned to the suspension corresponds to that of the case from which it was prepared. (See Table I.)

DR. PIJPER: ON MEASURING RED BLOOD-CELLS

FIG. I.—Diffraction patterns of "normal" blood (left) and blood from a case of pernicious anæmia (right). V = inner edge of violet circle. R = outer edge of red circle. Y = yellow circle.

FIG. II.—Normal blood (left): blood from a case of subacute combined degeneration of the cord (right).

I



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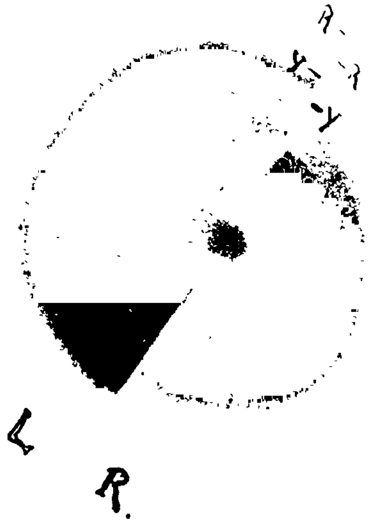

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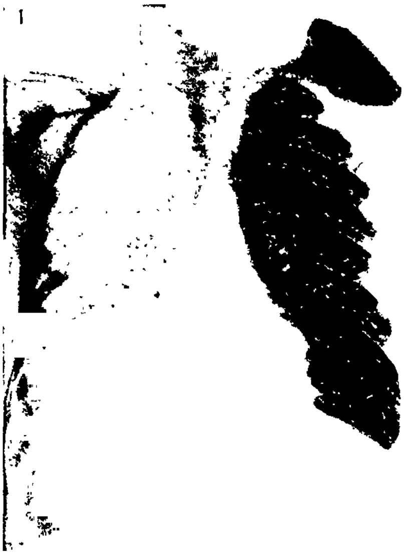

7.vi.34

II

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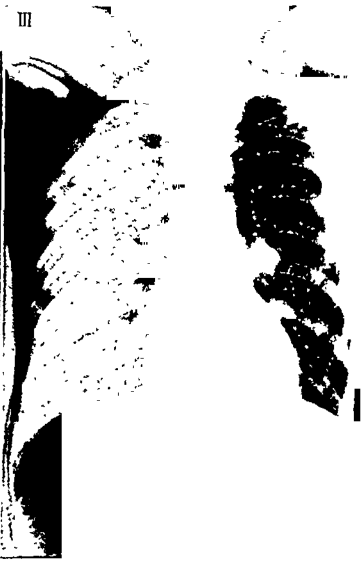
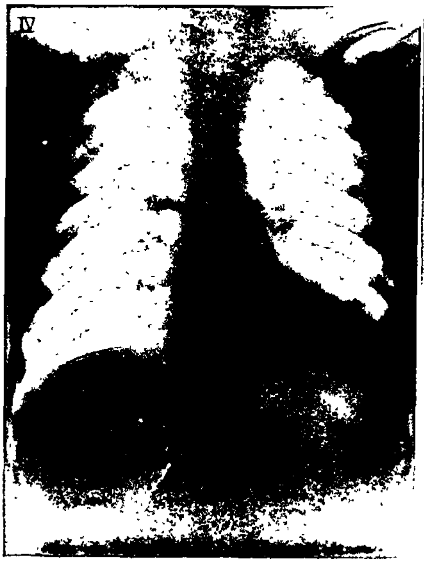
III

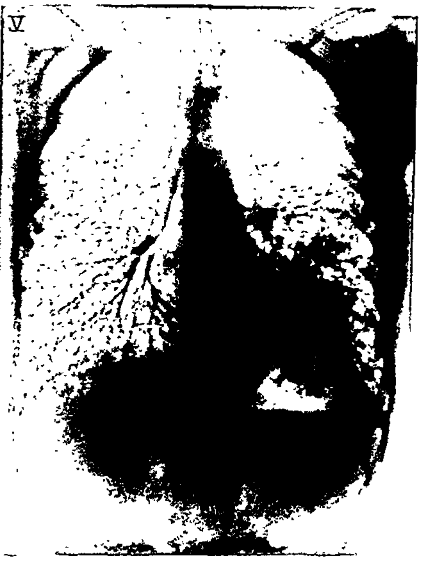


16.vii.34

IV



V



DR. HALL: BILATERAL BRONCHIAL OBSTRUCTION

FIG. I.—Collapse of right lower and right middle lobes suggestive of lobar pneumonia.

FIG. II.—Continued collapse of same lobes.

FIG. III.—Condition after first bronchoscopy.

FIG. IV.—Result of obstruction to left main bronchus.

FIG. V.—Normal appearance after second bronchoscopy (lipiodol injection).

No attempt was made to measure the size of these particles since the methods commonly employed for this purpose (ultrafiltration and ultracentrifugation) require the use of a susceptible laboratory animal. It is sufficient, therefore, to state that the bodies found in suspensions obtained from rheumatic pericardial fluid were distinctly smaller than vaccinia elementary bodies when examined under the same optical conditions. It is fully realised that the utmost caution must be used in interpreting the results of microscopical examinations of this kind. We believe, however, that these findings can be regarded as significant when taken in conjunction with the other experimental evidence now to be described.

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5	,,	+	0	3 ,,	+	0
6	Subacute.	+	+	3 ,,	+	No effusion.
7	Chronic.	+	+	Several months.	0	0

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3	2, 3, 4	1/32	Active, nodules.
	2	1/16	2 weeks later, active.
	4 & 5	1/64	3 months later, acute pericard., pleurisy.
4	3	Neg.	Active, nodules.
	4	1/8	2 weeks later, active.
5	4	1/16	Active, nodules.
6	4 & 5	1/32	,, ,,
7	3, 4, & 6	1/16	,, ,,
8	6	Neg.	Acute pericarditis.
	4	,,	2 weeks later; died a few days later.
9	4	,,	Subacute pericarditis, nodules.
	4	,,	1 week later; died a few days later.
10	4	,,	Active, nodules.
11	3 & 6	1/32	Convalescent.
12	,,	Neg.	,,
13	,,	,,	,,
14	,,	1/16	,,
15	3, 4, & 6	Neg.	,,
16	3	,,	Convalescent; recent nodules.
17	3	,,	Convalescent.
18	4	,,	Convalescent; recent nodules.
19	2	,,	Convalescent; recent pericard.
20	2	,,	Convalescent.
21	3	,,	Quiescent.
22	2	,,	,,
23	3	1/8	,,
24	3	Neg.	,,
25	3	1/4	,,
26	3	Neg.	Quiescent; recent tonsillitis.
27	6	,,	,, ,, ,,
28	3 & 6	,,	,,
29	,,	,,	,,
30	,,	,,	,,
31	,,	,,	,,
32	,,	,,	,,
33	,,	,,	Quiescent; recent tonsillitis.
34	,,	,,	,,
35	,,	,,	,,
36	,,	,,	Quiescent; recent tonsillitis.

The number assigned to the suspension corresponds to that of the case from which it was prepared. (See Table I.)

of an active infection was recognised by a combination of the signs and symptoms enumerated above. In this group of convalescent cases the blood was examined four to eight weeks after the cessation of the stage of activity. The group of *quiescent* cases consisted of patients in whom no signs of active rheumatic infection had been observed for many months. The results obtained are summarised in Table II.

From the results shown in Table II., it is evident that agglutinins could be demonstrated only at certain stages of the disease. The highest titres were obtained with the sera of patients in whom the rheumatic process had been active for a long period. Multiple subcutaneous nodules, indicating a wide dissemination of the infective agent, were a characteristic feature of the clinical picture presented by these patients. Even when relapses occurred and the infection developed into an acute pericarditis or pleurisy, as in Cases 1 and 3, the production of agglutinins was maintained. When, on the other hand, the disease steadily progressed to a fatal termination, possibly owing to a poor resistance on the part of the patient or as the result of a particularly virulent infection, the tests for specific agglutinins were negative. Positive reactions were only obtained in 2 out of 10 patients who were in the early stages of convalescence from active rheumatism and in only 2 out of 16 quiescent cases.

CONTROL EXPERIMENTS

During the course of the investigation each antigen was tested against a number of sera obtained from normal healthy persons and from patients suffering from various non-rheumatic diseases. Completely negative reactions were obtained with sera from the following conditions: 9 cases of syphilis (6 with a positive Wassermann reaction); 12 cases of zoster, all of which agglutinated a zoster elementary body suspension; 2 cases of active rheumatoid arthritis; 4 cases of active Still's disease; and 2 cases of streptococcal tonsillitis (taken 2 weeks after the attack).

As previously mentioned suspensions were prepared from pericardial and pleural fluids of non-rheumatic control cases. With none of these was a positive agglutination obtained with any of our known agglutinating sera.

The possible influence of hæmolytic streptococcal throat infections on the agglutination reaction was further investigated by testing 6 sera obtained from patients who were convalescent from scarlet fever. The blood was taken approximately three weeks after the onset of the disease. In 5 of these, there was no history of rheumatic disease and the sera failed to agglutinate the rheumatic pericarditis suspensions. In one case, however, the agglutination reaction was positive. When the patient was examined it was found that there had been persistent tachycardia during the third week of convalescence and that the temperature was slightly raised (99·6° F.) on the day on which the blood sample was taken. There was no evidence of cardiac disease, but the patient gave a definite history of "joint pains" and it was found that her mother suffered from mitral stenosis.

The following experiment also shows that streptococcal antibodies play no part in the agglutination reaction here described. Thirteen sera obtained from patients in various stages of rheumatic disease were tested for antistreptococcal agglutinins, using a suspension of hæmolytic streptococci ("Carter" strain) as antigen. Of these 13 sera, 2 agglutinated this suspension to a titre of 1 in 8, while the rest gave completely negative reactions. The same 13 sera were then tested with a rheumatic pericardial suspension. The 2 sera that contained antistreptococcal agglutinins gave a negative reaction, while a positive result was obtained with 4 other sera in which antibodies for streptococci had not been demonstrated.

It has already been mentioned that an increased erythrocyte sedimentation-rate was constantly present in those cases of active rheumatism in which a positive agglutination reaction was obtained. Increased velocity of sedimentation of the red blood-cells depends largely upon an increase of serum globulin and fibrinogen, and it therefore appeared necessary to exclude the possibility that such alterations in the blood protein content were responsible for flocculation of the antigen. For this purpose 5 sera obtained from women in the late stages of pregnancy were each tested against three different pericardial suspensions. The results were entirely negative.

It was also necessary to consider one further possible source of error. Since the human isoagglutinogens can be demonstrated not only in the erythrocytes and fixed tissue cells but also in saliva and urine (Yamakami, 1926), it was thought that they might possibly also be present in pericardial exudates. If this were so, the antigens prepared from pericardial fluids might contain these agglutinogens which would then react with the corresponding isoagglutinins, should these be present in the serum to be tested. Fortunately this serological complication did not occur in actual practice; examples of it would otherwise have been encountered among the control tests. This conclusion was confirmed by ascertaining the blood groups of 12 rheumatic patients whose sera had already been tested for agglutinins, the same sample of antigen being employed in each case. No correlation between the two reactions was found.

Discussion

The investigations described in this paper, although by no means exhaustive, are regarded by us as definite evidence in favour of the hypothesis that the infective agent of rheumatic disease is a virus. The striking similarity between the results obtained in the present study and those reported in connexion with such established virus infections as varicella and vaccinia-variola with regard to the isolation of elementary bodies and the agglutination of these by the homologous antiserum, lends considerable support to this belief. The final proof, however, must rest upon the demonstration that the bodies described in this investigation are capable of reproducing the disease in a susceptible animal. The number of viruses that have been successfully adapted to a foreign host is steadily increasing and further attempts to achieve this object in the case of rheumatic disease are indicated.

This new conception of the ætiology appears to offer an explanation of several facts in the pathogenesis of the disease which the older theories cannot account for. Acute rheumatism has long been recognised as a disease that shows a special affinity for certain tissues such as the endothelial lining of the heart, the blood-vessels, serous membranes, and connective tissue throughout the body. Furthermore, the submiliary nodule which is the fundamental basic lesion and represents the essential reaction of the tissues to the infective agent is characterised by an active proliferation of cells derived from the reticulo-endothelial system. A similar type of inflammatory lesion is equally characteristic of vaccinia, for Ledingham (1924) and others have shown that this virus proliferates in tissues of mesoblastic origin and that the reticulo-endothelial tissue is the seat of primary attack and takes the chief share in repair.

The pulmonary manifestations of acute rheumatism are also of interest in this connexion. Naish (1928) and many others have stated that the changes which are sometimes present in the lungs are peculiar to rheumatism and quite unlike those found in the usual type of pneumococcal pneumonia. The hæmorrhagic character of the inflammation, with much proliferation of endothelial cells, thickening of the alveolar walls, and absence of much fibrin and polymorphonuclear cells, bears a striking resemblance to the condition found in influenzal pneumonia in man, and also to the pulmonary changes in swine influenza. We believe, in conclusion, that the evidence obtainable from a histological study of rheumatic lesions is more in accordance with the conception of a virus as the ætiological agent than with any other theory.

The characteristic properties of the infective agent of rheumatism cannot be closely paralleled with those of any known virus. Some of its characters, however, are shared by a number of virus agents. Such diseases as variola and mumps which run an acute course and confer a solid immunity to reinfection clearly have nothing in common with acute rheumatism. There are other virus diseases, however, such as herpes febrilis, in which the agent remains in the tissues for long periods and becomes manifest only when the general powers of resistance to infection are lowered. In this case the period of immunity following a clinical attack is comparatively short and the infective agent can be demonstrated in the nasopharyngeal secretion in the intervals between attacks.

Many other questions relating to the epidemiology of rheumatic disease, such as the significance of subclinical infections and the possibility of a true symbiotic relationship between the virus of rheumatism and hæmolytic streptococci, could be discussed in the light of this new conception of the ætiology. Such discussion, however, would be mainly speculative. We prefer, therefore, to confine ourselves at present to a simple record of the experimental findings in the hope that further research along these lines will eventually solve the problem of the causation of rheumatic disease.

Summary

1. The deposits obtained by high-speed centrifugation of pericardial fluid from cases of acute rheumatic pericarditis contain particles which morphologically resemble virus elementary bodies. Similar bodies have been found in the deposit obtained from one pleural exudate in association with rheumatic pneumonia.

2. Relatively pure suspensions of these bodies in formol saline have been prepared. These suspensions are specifically agglutinated by the sera of patients who are suffering from, and successfully resisting, an acute rheumatic infection. The sera of patients in whom the infection is quiescent fail as a rule to agglutinate these suspensions. Completely negative reactions were also obtained with the serum of normal persons and of patients suffering from various non-rheumatic infections.

3. On the evidence above summarised it is suggested that the bodies found in pericardial exudates represent the actual infective agent of acute rheumatism.

4. The importance of streptococcal infection as a factor in the ætiology of the disease is recognised. It is suggested that the lowered resistance produced by such infections enables the virus to enter the body or, if the virus is already lying latent in the tissues, allows it to assume active characters.

We wish to thank the medical staffs of several hospitals for placing their clinical material at our disposal. We are also grateful to Prof. J. C. G. Ledingham, director of the Lister Institute, and to Dr. David Nabarro, director of the pathological department of the Hospital for Sick Children, Great Ormond-street, for the help they have afforded us throughout this investigation.

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THE RELATIONSHIP BETWEEN ADENOMATA AND CANCER OF THE LARGE BOWEL*

By J. P. LOCKHART-MUMMERY, M.B., B.Chir. Camb., F.R.C.S. Eng.

EMERITUS SURGEON TO ST. MARK'S HOSPITAL FOR DISEASES OF THE BOWEL, LONDON

IT has been known for many years that there is a close relationship between so-called innocent adenomatous tumours and cancer, and that an adenoma which is at first innocent may be found at a later stage to have been replaced by cancer. Not infrequently careful microscopical examination of large adenomatous tumours by serial sections has shown that at one part of the tumour invasion of the deep tissues has taken place and malignant change occurred. This was pointed out by Dr. Cuthbert Dukes in 1926 [1] and by him and myself again in 1928.[2] While most of the observations have been made in connexion with adenomata of the large bowel, the same has been shown to be true of duct adenoma of the breast by Sir Lenthal Cheatle [3] and of adenoma of the stomach by Prof. Stewart.[4]

It seemed to me that valuable information might be obtained if the after-histories of a large number of cases of so-called simple adenomata of the large bowel could be traced during a number of years to see exactly what happened to the patients. It is very generally assumed that if an adenoma is removed adequately, and is found on microscopical examination exhibit no evidence of malignant change in any t of its structure, that nothing further is to be ed, and that the patient is cured in the true sense. no real evidence has hitherto been available on ch to base such an assumption, and as I shall to show, it is as a matter of fact quite unjustified false. The patient is by no means certainly cured the removal of the adenoma, however completely removal is carried out. It is probably true that particular adenoma which has been removed will return, but the changes in the epithelial cells which e resulted in the formation of the adenomatous our may still be present and other adenomatous ours are liable to form in the neighbouring helium.

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* A post-graduate lecture delivered at St. Mark's Hospital on Feb. 4th.

THE INQUIRY

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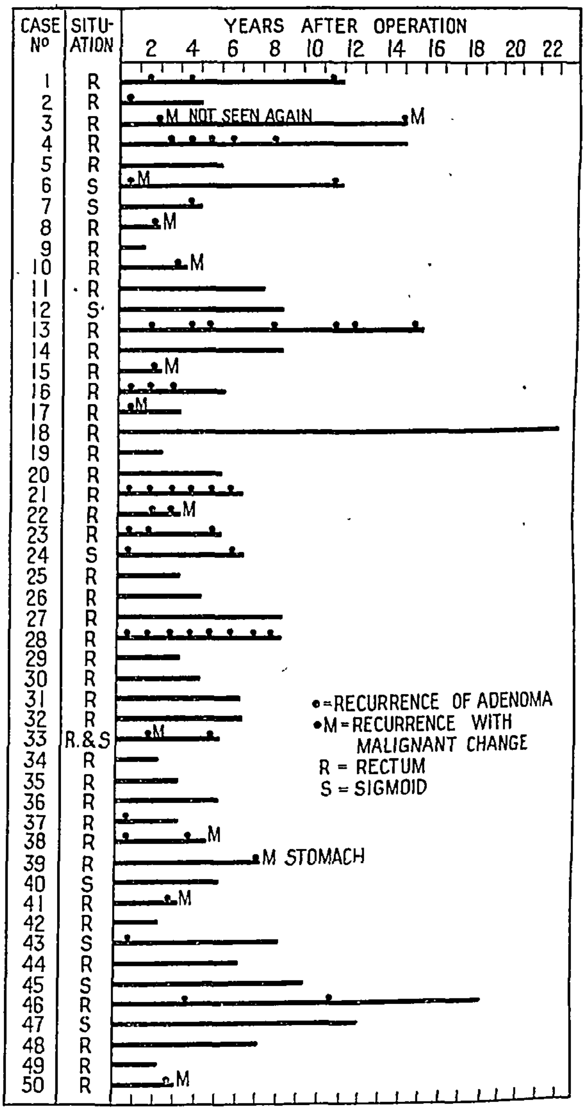
Some of the cases were very remarkable. Thus, one patient had no less than eight adenomata in different parts of the rectum during 15 years, while another had six in 14 years. One patient had seven adenomata in 6 years and another nine in 8 years. One patient after having two recurrences went 6 years and then developed another.



Fifty cases of adenomata in the rectum and sigmoid.

As will be seen, by a study of the accompanying chart, the proportion of cases in which other adenomata developed was very high; actually this occurred in about 50 per cent. It is too easily assumed that because an adenoma has been removed months or years before from the rectal mucosa, that the finding of another subsequent adenoma is due to a recurrence of the original tumour. I am convinced that such is not the case, but that the subsequent adenomata are almost always new primary tumours, not parts of the first tumour. In this series of cases careful note was taken of the situation of the secondary adenomata, and it was almost invariably found that the secondary tumours were not in the same position as the original tumours that had been removed. In very many cases the secondary tumours were inches away from the original site, or on a different aspect of the rectum altogether. In some cases the secondary tumours were much higher up in the colon. A reference to the chart shows that in a large number of cases adenomata were removed which were proved to be innocent in character, but that subsequently, sometimes many years later, another tumour formed which was definitely malignant. This actually took place in 12 out of a total of 50 cases.

While I was well aware of the fact that adenomata were liable, if left alone, to change into malignant growths, it has been a surprise to find that there were such a large number of cases where patients have developed malignant adenomata subsequent to the removal of an innocent one. I think we are justified in saying that adenomata of the bowel epithelium are not innocent in any sense, and are merely a stage in the development of cancer.

An adenoma may grow to a very large size without becoming malignant. Some of those in this series covered an area of four or five inches, and some were as large as oranges, but were not malignant in any part. In a few instances, owing to the age of the patient, or other infirmities, very large adenomata have not been removed, but have been observed for a number of years and have not shown any signs of malignant change, while on the other hand comparatively small ones have been observed to become malignant tumours in a few months. Generally speaking, however, it has been my experience that small adenomata are very seldom found to be malignant, a certain optimum size seems to be necessary before a malignant change occurs.

It seems that once a patient has developed an adenoma in the rectum the mere removal of the tumour, however thoroughly it is done, is not sufficient to prevent that patient from developing another adenoma, or even from developing cancer.

When the entire rectum has been removed for an adenoma there has been no instance of the formation of a second primary tumour in this series of cases. The only cases where a complete excision has been performed are those cases where on account of the size or extent of the adenoma, the only feasible method of removal was by complete excision. The inference appears to be that complete excision of the rectum is the only effective way to rid the patient of adenomata, but although this may be the best method on purely theoretical grounds it is for many reasons seldom possible. This series, however, shows that if the patient is carefully examined regularly every four or five months secondary tumours can be detected in the very early stage when they can be removed with the cautery, or by burning them with fuming nitric acid, and that by such means patients can be protected from any serious development for very many years. In only one of these 50 cases in which this method was adopted, did the patient develop a malignant tumour, and in that one case the innocent tumour was in the rectum and the secondary one, which became malignant, occurred in the pelvic colon out of reach of the sigmoidoscope.

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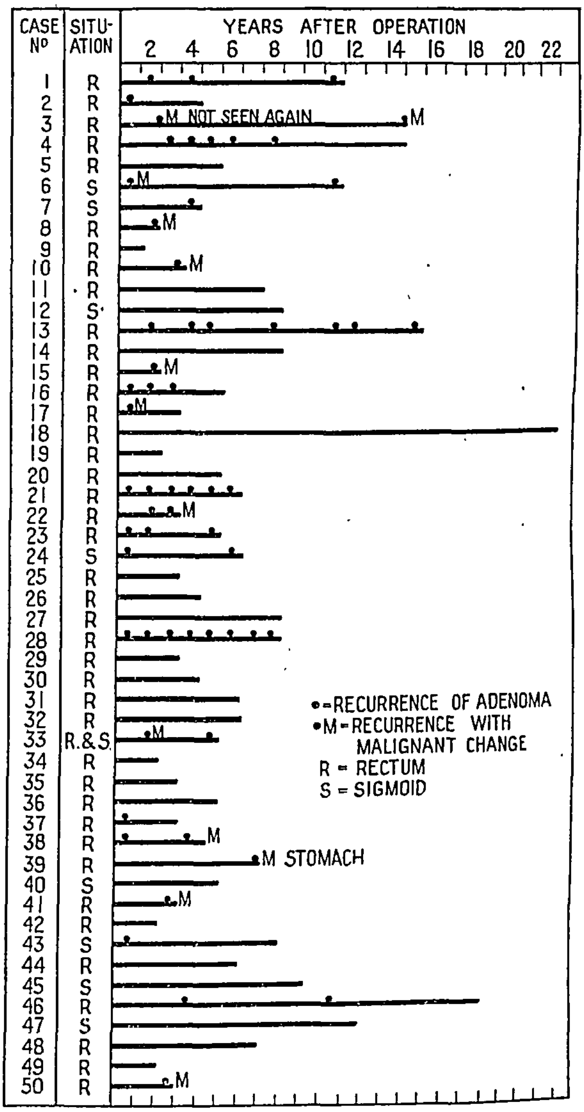

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It is becoming increasingly evident that more can be learnt about the problem of tumours by a careful study of adenomata of gland tissue than by a study of actually malignant tumours themselves. The tumour problem must be the same, or very similar for all true tumours. Indeed it is possible that essential difference between simple and malignant tumours is dependent upon their different rates of growth. In a paper just published, J. C. Mottram[5] describes the results of a study of the rate of growth of tar warts in mice and postulates the possibility that the growth rate decides the question of innocency or malignancy. Where the growth rate is slow the tissues are able to set up a protective reaction against the process, but when the growth rate is fast this protective reaction breaks down and invasion of other tissues by the rapidly reproducing cells take place.

From a practical point of view local removal of the tumour would appear to be sufficient *if* the patient is carefully watched at four-monthly intervals during the next five to ten years, so that fresh tumours can be removed at once before they have had an opportunity of becoming malignant. But unless the patient is kept under observation in this way the development of other tumours is very likely to occur unobserved. The frequency of such a happening appears to be about 50 per cent., and a considerable danger exists of malignancy supervening.

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ON MEASURING RED BLOOD-CELLS

WITH SPECIAL REFERENCE TO A NEW DIFFRACTION APPARATUS

BY ADRIANUS PIJPER, M.D. Leiden
PATHOLOGIST TO THE PRETORIA HOSPITAL

(WITH ILLUSTRATIONS ON PLATE)

THE accompanying figures are reproduced from photographs of coloured semicircles as they appear on the ground-glass screen of the new diffraction apparatus for measuring red cells to be described here. On the left in both pictures are the diffraction semicircles produced by "normal" blood; on the right in Fig. I. are semicircles from a case of pernicious anæmia, and those in Fig. II. are from a case of subacute combined degeneration of the spinal cord. The differences between these three types of diffraction patterns are obvious enough, even in these black-and-white photographs. They are very striking when seen in their full colours in the apparatus. The patterns produced by secondary anæmias and by microcytic anæmias are quite different again from those reproduced here.

ROUTINE AND RESEARCH

A "routine" blood examination usually consists of hæmoglobin estimation, red cell count, and microscopic inspection of a stained smear. Additional investigations on the red cells, including red cell measurements, are usually regarded as "research."

Price-Jones' work[1] established the value of red cell measurements. But for its laboriousness such a microscopic method would have become "routine." But nobody can afford to spend a couple of hours measuring red cells every time a blood smear is made. Thus the paradoxical situation has arisen that measuring is mostly done when it is least needed. It is used to confirm, not to inquire. It has been said that a diagnosis of pernicious anæmia often comes as a surprise.[2] The truth of this is brought home to one when red cell measurements are a routine measure. Without red cell measurements the differential diagnosis of anæmias outside highly specialised clinics depends chiefly on calculation of the hæmoglobin-index and inspection of a stained smear, of which the former is subject to a 20 per cent. error at least, while the interpretation of the latter is largely a matter of opinion. Feeble as this method is elsewhere, the calculation of the "index" breaks down completely in countries like the Transvaal, where many people live in perpetual sunshine at an altitude of five or six thousand feet, with frequent and sudden descents to, and returns from, sea-level, in the shape of rapid trips to the coast or down a mine. Counts of 6 million red cells in anæmic persons are not at all unusual here.

The very laboriousness of measuring red cells microscopically and plotting the results seems to impress many people as being a guarantee of accurate results. That method of fixing and staining, source of light, properties of substage condenser, quality and especially aperture of objective, fineness of pencil point or thickness of graduations of micrometer, boredom and personal equation of the observer all affect the results is too often forgotten. In fact, a Price-Jones curve consists of two curves superimposed. One is the curve of actual diameters, the other is the "normal curve of error." These remarks do not attack the usefulness of the method, they are merely meant to counteract the growing but unwarranted tradition that a Price-Jones curve is the last word in accurate and reliable research. Critical microscopists know better, and the hardly measurable does not become more measurable by spending more time over it.

THE DIFFRACTION METHOD

The diffraction method of measuring red cells, which I first described in 1919,[3] and applied diagnostically in 1924,[4] was greatly improved by me in 1929.[5] The criticisms which are levelled against the method are all concerned with the admittedly somewhat primitive technique of 1924. This is largely due to the fact that after 1924 from various sources several apparatuses were put on the market, embodying this simple technique, sometimes even without an understanding of its leading principles. The improved method of 1929, requiring more insight and more elaborate apparatus, did not lend itself to this popularisation. Except for the work of Ponder[6] and Miller[7] nothing new was added to the method by all these efforts at popularisation and simplification. They may be regarded, however, as an indication that the need for a quick and reliable method of measuring red cells is universally felt.

IMPROVED DIFFRACTION METHOD

The full advantages of the improved diffraction method, as used by me, and a few others, with complete satisfaction, are now available in a new and self-contained apparatus. It is built on the lines laid down by me in 1929, but owes its compactness to the ingenuity of Prof. Siedentopf, of the firm of Zeiss, who interested himself in the method, and after thorough investigation designed a suitable apparatus.* This has the advantage that the source of light is built-in, and once it has been put up, which is a simple matter, no further adjustments are required. There is a horizontal stage, on which two blood smears can be placed. Their diffraction patterns, produced by about a million cells, appear on a ground-glass screen which forms the top of the apparatus. A partition placed in the middle of the apparatus cuts out half of each diffraction pattern, and the remaining semicircles appear in close apposition on the screen, facilitating comparison, as illustrated in Figs. I. and II.

READING RESULTS

Each diffraction pattern consists of a bright white centre, surrounded by an orange ring, and then follow the colours of the spectrum in natural order, starting with violet and finishing up with red. After that green and red circles alternate with one another. For practical purposes the cardinal points are the positions of the inner edge of the violet circle (V), of the outer edge of the red circle (R), and the position of the yellow circle (Y).

Normal blood smears show little variation in the positions of these three rings. The limits of what might be called normal variation are given in the Table. The meaning of this individual variation has been discussed elsewhere.[8] For routine work one compares the diffraction rings produced by a blood smear from a healthy person giving average readings with those produced by the patient's blood smear. This will give information as to the mean diameter of the patient's red cells, and also as to the degree of anisocytosis and sometimes of poikilocytosis present in his blood.

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* The apparatus is sold by Messrs. Carl Zeiss, Jena, as "Blutzellenprüfer nach Dr. Pijper" or "Dr. Pijper's Bloodcelltester." A special booklet issued with the apparatus gives full details and working directions.

The principles on which this is done have been outlined before.[4 5] The reliability of this information has been amply confirmed by me in actual clinical practice during the past seven years, and also by control microscopic measurements undertaken for this purpose.[9] For the proper use of the diffraction method it is essential to adhere to these principles and to abide by the rules laid down in connexion with this apparatus for reading results. No satisfactory results can be obtained by merely estimating the size of a "halo" or by measuring the diameter of a single coloured ring, chosen at random. The range of variation of the three coloured rings mentioned above (V, Y, and R) in different anæmias is given in the Table. *It is not necessary to make actual measurements in every case.* After some practice the direct comparison with normal blood enables one to get the required information simply by glancing at the diffraction patterns. Thus one pattern will give a diagnosis of microcytic anæmia, another will be characteristic of pernicious anæmia, while a third will exclude pernicious anæmia and make a decisive diagnosis of secondary anæmia. Again, there is a difference between the typical pattern of pernicious anæmia with pronounced anæmia and those forms where nervous symptoms predominate and changes in the blood are hardly detected except by red cell measurements. Measurements of the circles are performed directly by means of a pair of compasses on the ground glass along the black dividing line between the two patterns, or indirectly by placing a piece of transparent paper on the ground glass and marking the circles on the paper, with subsequent measurement. This last method has the additional advantage of giving permanent records which can be attached to the hæmatological report.

Rings in mm.	Pernicious anæmia.	Normal.	Secondary anæmias.	Microcytic anæmias.	Hæmolytic icterus.
V	22–29	33–35	28–32	35–38	39–43
Y	50 and less	52–56	55–56	57–61	63 and more
R	58–64	65–70	67–77	74–78	90 and more

It is convenient to divide pathological diffraction patterns into three types, depending on the facts that the diameter of the yellow circle (Y) varies in inverse ratio to the mean diameter of all the cells, and that the distance between V and R increases as anisocytosis increases. Poikilocytosis, if pronounced, interferes with the regularity of the patterns and produces watery colours.

TYPE 1.—All three rings small; for measurements see the Table. Distance between V and R *relatively* large. This pattern means macrocytosis and pronounced anisocytosis. This is typical of pernicious anæmia. In the anæmic form there is often so much poikilocytosis that the colours are watery (Fig. I.). In the nervous form there often is little poikilocytosis and the colours are bright (Fig. II.).

TYPE 2.—Yellow ring of normal diameter, which means normal mean diameter of cells; for range of variations see the Table. Ring V is smaller than normal, ring R is larger than normal. This means that there is more anisocytosis than normal; its degree can be read off from the distance between V and R, as compared with the normal pattern on the left. The colours may be somewhat diffuse, on account of their being spread out over a larger area, but they only become watery when there is distinct poikilocytosis as well. This is the pattern I find in secondary anæmias, whatever their causation (infections, hæmorrhages, other diseases).

TYPE 3.—Counterpart of Type 1. All three rings larger than normal, and distance between V and R often relatively increased, as a result of anisocytosis; for range of variations see the Table. This is the pattern I find in microcytic anæmias, and also in hæmolytic icterus. Untreated cases of the latter disease during periods of exacerbation may show truly enormous rings. Extirpation of the spleen, or quiescent periods, may reduce them to more normal size.

In all three types comparison of the diffraction patterns produced by blood smears taken at intervals affords probably the most sensitive and quickest method of following the progress of the case.[10]

CALCULATION OF RED CELL DIAMETERS

The mean diameter of the red cells in all cases is calculated by taking the diameter of the yellow circle (Y) in millimetres, subtracting one millimetre *(for the image of the source of light), and dividing* into 395. The result is the mean diameter in microns. Example: the yellow circle measures 54 mm.; dividing 395 by 53 gives 7·5 microns.

It is possible, by means of a special formula,[5] to express the degree and quality of anisocytosis in diameters of red cells. In practice this is hardly felt *to be necessary. At most, one calculates the mean* cell diameter and reads the anisocytosis from the relative position of the three rings.

DISCUSSION

It is not always possible to say that a given diffraction pattern is definitely pathological. There *are transitions between the range of normal variation* as given in the Table, and definitely pathological states. Thus a yellow circle of 52 mm. (red cell diameter= 7·7 microns) is still normal, and one below 50 (red cell diameter=8·1 microns) is definitely pathological, but values between these two figures may have various meanings. There exist macrocytoses of varying degrees of different origins, which are not very well established at the present time, and will probably become better known through more universal use of red cell measurements.

It is not claimed that the improved diffraction method is a short cut to hæmatological diagnosis. It is not suggested that the usual routine measures should be abandoned, but red cell measurements have proved their worth in research, and thus have become essential for routine examinations. They give information which no other method can give. That they have not come into their own is due to the fact that pathologists thus far have not had a satisfactory method of ascertaining them. It would be easy to extract a series of cases from my own laboratory records alone where the diffraction method supplied a diagnosis when other measures had failed, more especially in the nervous form of pernicious anæmia, but also in acholuric jaundice. Apart from those instances in which valuable positive information is gained, there are other instances where application of the diffraction apparatus in this form permits the immediate exclusion of a suspected diagnosis. A diffraction pattern of Type 2 or 3, for instance, never occurs in pernicious anæmia. Patients with a diffraction pattern of Type 2 should receive the benefit of a further investigation so as to lay bare the cause of their secondary anæmia.

It takes very little time or trouble to become conversant with the workings of the apparatus, and afterwards only a few seconds to secure information as to diameters of red cells in every blood smear dealt with. The importance of this information can only be appreciated by actually using the method, which, however, is not meant to be used to the exclusion of other methods. For this reason the apparatus is not intended so much for the busy practitioner as for the clinical laboratory, where the workers who, so far, have not had a method that was satisfactory for practical purposes can fit its results into other findings.

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Clinical and Laboratory Notes

BILATERAL BRONCHIAL OBSTRUCTION

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(WITH ILLUSTRATIONS ON PLATE)

BRONCHIAL obstruction, other than by carcinoma, is beginning to occupy the attention of physicians rather more than formerly, and certain syndromes are becoming better known. It has long been recognised, for example, that complete obstruction produces collapse of the lung peripheral to the block, but hitherto it has not been generally understood that obstruction which is not quite complete is sometimes associated with a sort of valve action, with emphysema of the lung supplied by the bronchus. The following case illustrates both these sequels to blockage.

The patient was a boy aged 5, who, a year before admission had had a pneumonic condition of the left lower lobe and several subsequent mild attacks of bronchitis. He was admitted to the Royal Chest Hospital on the third day of an illness in which the chief symptoms were extreme dyspnœa and pain in the abdomen. Clinically this was a case of right lower lobe pneumonia, although no bronchial breathing was heard, and radiography seemed to confirm this diagnosis. (Fig. I. on Plate.) Progress was not satisfactory, however, and a later radiogram (Fig. II.) showed some collapse of the right middle and lower lobes. A foreign body was suspected and on the twenty-sixth day of his illness he was bronchoscoped by Mr. A. M. Zamora, who removed a piece of peanut. The left bronchus was not inspected. X ray examination several days later showed almost complete re-expansion. (Fig. III.)

He still continued coughing, showing signs of bronchitis, and some weeks later a Mantoux test (0·0001, OTB) was done, this being followed in 36 hours by a marked local reaction, extreme dyspnœa, and high fever. Examination showed hyper-resonance of the left lung except at the base and complete absence of breath sounds. A diagnosis of left bronchial obstruction was made and it was thought to be due to swelling of the mediastinal glands as part of the tuberculin reaction. Radiography showed no enlargement of the glands, but it showed collapse of the left lower lobe. (Fig. IV.) The child gradually recovered, although the breath sounds in the left chest remained weak and he was discharged from hospital; two days later he was readmitted in exactly the same condition as that following the Mantoux test. He was again bronchoscoped by Mr. Zamora, who this time removed a pedicled granuloma from the left main bronchus. Recovery was rapid and the child has been well ever since. A lipiodol radiogram shows a normal bronchial tree. (Fig. V.)

The sequence of events is interesting: (1) a pneumonic condition of the left lower lobe a year before admission, possibly due to obstruction by a granuloma; (2) the inhalation of a peanut, producing complete obstruction of the right lower bronchus with collapse of the right middle and lower lobes; (3) removal of the peanut; (4) complete obstruction by a granuloma of the left lower lobe bronchus, with collapse of the lobe and incomplete obstruction of the left upper lobe bronchus with emphysema of the upper lobe; (5) removal of the granuloma; (6) bronchial tree normal on lipiodol examination.

STREPTOCOCCAL SEPTICÆMIA TREATED WITH ANTITOXIN

BY R. M. BATES, F.R.C.S. Eng., D.P.M.

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A Mongol boy aged 13 was admitted to the hospital at Stoke Park Colony suffering from a typical attack of acute gastro-enteritis.

Two days later, following a rigor, the temperature rose to 105° F. and a small area of cellulitis was noticed upon the front of the left leg. The stools, which like the vomited material had been grass-green at the onset of the attack, were now normal in colour but still relaxed. Bacteriological examination of urine and fæces gave a negative result, but the urine contained a trace of albumin. The patch of cellulitis rapidly increased in size and was followed by a similar one on the dorsum of the left foot. Pus formation was slow, and meanwhile new areas of cellulitis appeared on the dorsum of the right foot, at the left elbow, and on the inner side of the right knee. Six days after admission to hospital the patient showed signs of a left lower lobar pneumonia. At the end of the second week diminished breath sounds at the same situation suggested the presence of fluid, and aspiration produced 7 c.cm. of blood-stained purulent fluid. On the same day the superficial abscess on the dorsum of the left foot was incised. Direct films and cultures from the pus in each case showed streptococci. An intramuscular injection of concentrated streptococcal antitoxin (scarlatina) 4 c.cm. was given the same day and continued in the same dosage twice daily.

During the third week the pleural cavity was emptied three times by syringe. On the first occasion 40 c.cm. of pus were withdrawn, 30 c.cm. on the second, and 6 c.cm on the third and last occasion, one week after the original needling. The pus obtained at each aspiration gave a pure culture of *streptococci*. Thereafter the lung expanded well, breath sounds returned, and there were no furthe signs of fluid. The areas of cellulitis formed abscesses and these were incised and drained as pus formed. Again the pus in each case gave pure cultures of streptococci.

During the fourth week, after the temperature and pulse-rate had settled, the antitoxin was reduc
4 c.cm. once daily. It was suspended altogeth
the fifth week, but recommenced during the
to the formation of a deep-seated abscess
arm. This was drained and 4 c.cm. were giv
for a further six days. In all, five abscesses
and two areas of cellulitis resolved without a
tion. The patient was discharged from h
weeks after admission.

In this case the streptococcal infection
originated in the alimentary tract; the
and empyema arose during the course o
cæmia. One week's treatment by aspiratic
toxin sufficed to clear up the empyema.
taken for the first abscess to heal com
incision was 14 days. The average time
the healing of four abscesses which la

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incision was seven and a half days. Two of these latter were deep-seated.

Concentrated antistreptococcal serum may be given to children over a long period and in large amount. This patient received 136 c.cm. without any evidence of serum sickness. Urticaria appeared during the third week when the dosage was 8 c.cm. daily, but disappeared spontaneously in 24 hours.

I am indebted to Mrs. Burden, warden of Stoke Park Colony, for her kindness in paying the expenses of this treatment, and to Prof. R. J. A. Berry, director of medical services, for permission to publish the case.

POLYRADICULONEURITIS WITH ALBUMINO-CYTOLOGIC DISSOCIATION OF THE CEREBRO-SPINAL FLUID

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THE condition described by French neurologists as polyradiculoneuritis appears in the initial stages to be a very grave illness, but has a benign course and carries a reasonably good prognosis.

A man aged 55, never previously ill, got soaked through on his way to work on May 29th; he had to travel by train for several hours, shivered and became feverish. The next day he felt unwell. On the third day he woke up with pains in his back and neck, arms and legs, and with paræsthesiæ in the limbs. It was a great effort to walk, and weakness increased daily. His temperature, however, was normal from the third day onwards. He was admitted to hospital on the seventh day, with slight rigidity of the neck and great tenderness to pressure over the brachial plexuses on both sides, and on the nerve trunks of the extremities. Lasègue's sign was present on both sides. The pulse-rate was 84, regular, and the temperature 36·4° C. The pupils reacted well and nothing abnormal was found in the ears, sinuses or elsewhere, except for a slight reddening of the throat.

During the next ten days the complete nervous syndrome of bilateral facial palsy and quadrilateral paralysis appeared. Muscular hypotony was accompanied by loss of tendon reflexes, and a quantitative diminution of sensibility to electric currents. The paresed peroneal muscles showed a partial reaction to degeneration. His muscular weakness compelled him to stay in bed, where he had to be fed by a nurse, as the only movements he could carry out were feeble ones of the shoulders and thighs. The sphincters were not affected. He remained in this condition for five weeks, and then the pareses disappeared gradually in the order in which they had developed; the facial palsy first, then that of the arms, and finally that of the legs. Ten months after admission he was discharged almost recovered, having only a very slight weakness of the peronei on both sides and absence of both knee-jerks.

An important diagnostic point was the marked excess of albumin without high cell count in the cerebro-spinal fluid. Lumbar puncture was performed three times; five cells were found. Pandy's, Nonne-Apelt's, and Weichbrodt's reactions were all strongly positive. The gold reaction was at first, 0112331000; later, 0135552100; and finally, 00011000; and the benzoin reaction was 2202 the first time, but negative the second and third times. The Wassermann reaction was negative in both blood and cerebro-spinal fluid, and cultures from both were sterile. He was treated by artificial pyrexia (typhoid vaccine, &c.) and by galvanotherapy and massage.

Guillain-Barré[1] described this syndrome for the first time in 1916. They said that the course was benign, but Margulis[2] and others showed that it might be subacute. The condition seems to be due to an unknown virus, probably filtrable. It has been described as secondary to osteomyelitis, epidemic parotitis, and other diseases, but recently these nervous complications have been ascribed to a neurotropic virus rather than to the primary disease. Popek,[3] however, does not agree. In our case the long exposure to cold and damp seems to have had some ætiological significance. We were able to give a favourable prognosis, though the patient was still very ill, as soon as we had correctly diagnosed his condition. The differential diagnosis is therefore of considerable practical importance.

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MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

ANNUAL ORATION

Sir WILLIAM WILLCOX delivered the annual oration *of this society on May 13th, and took as his subject*

Toxic Drugs: their Use and Misuse

During the present century, he said, the linkage between chemical constitution and pharmacological [illegible]on has been so closely studied that the pharmaco-[illegible]an to some extent deduce the therapeutic [illegible] organic compound. He can also foretell [illegible]ations in action follow modification in [illegible] thus in research on barbituric acid [illegible]s the substitution of an ethyl group by an [illegible]yl, or other radical leads to definite variation [illegible]cological action. The result of such changes [illegible]that enormous numbers of drugs of organic [illegible] been introduced, and sometimes their [illegible] has been too hasty. The borderland between [illegible]acological effect and a toxic or poisonous [illegible] often narrow, and one should be chary [illegible]ing drugs unless one has personal knowledge [illegible]afety in use. A glowing advertisement [illegible]lieve one of responsibility.

In 1934 an expert Committee (Poisons Board) was appointed with an advisory capacity in regard to the additions to the Poisons List and regulation of supply of substances having a toxic as well as a therapeutic action. In the report of this Board, which is to be issued, regulations will appear which will limit the supply of certain drugs of powerful therapeutic action to medical prescription. The public will be unable to purchase these drugs on their own initiative and their use will therefore be under medical supervision and control.

TOLERANCE AND INTOLERANCE

One of the most important functions of the liver is to protect the body against exogenous poisons such as drugs, and also against the complex substances formed during digestion and metabolism. When absorbed by the alimentary tract such poisons are conveyed by the portal vein to the liver which acts as the first line of defence; when they are introduced into the general circulation (e.g., by injection), the liver absorbs much of them from the blood stream and so protects the other tissues of the body. The liver in this way bears the brunt of the attack and in so doing its cells may undergo damage (cloudy swelling, fatty degeneration, or even necrosis). It is known that the presence of glycogen in the liver cell increases its resisting power to poisons, and it is therefore advisable that glucose should be taken freely within a few hours of the administration of a toxic drug, such as a general anæsthetic or arsenobenzol derivative. In cases where the liver has undergone necrosis and life persists some days after the taking of the poison the cause of death will be autointoxication from hypofunction of the liver (hypohepatism) and little or no poison may be found in the body.

If a person is allergic a toxic drug in normal dose may have an enhanced and even dangerous effect. A history or evidence of defect in liver or kidney function, the presence of some intercurrent infection or of some toxic focus of infection, a highly sensitised nervous system—all these suggest the likelihood of allergy. Hence these are all points which require careful consideration before the administration of toxic drugs. Certain persons, moreover, show a special sensibility or idiosyncrasy to a particular drug (quinine, belladonna, morphine, iodides, or arsenobenzol compounds), so that toxic symptoms arise from even small doses. The continued administration of certain drugs (morphine, heroin, cocaine) may, on the other hand, produce a tolerance to very large doses; but such tolerance may suddenly be lost, owing to intercurrent infection for example, so that the customary large dose becomes a dangerous one. In the case of many toxic drugs such as the barbiturates, or the quinoline group (cincophen), tolerance is never established and an overdose is always a dangerous dose.

SOME TOXIC DRUGS

Morphine and Heroin are invaluable, and timorous prescribing is more likely to lead to addiction than the employment of adequate amounts. Morphine may be generously given for organic disease and the comfort of the patient ensured provided that measures are taken for dealing with the cause of the symptoms. The use of morphine and heroin for psychical symptoms, however, is attended with danger of addiction. Furthermore these drugs are poisons to the liver and kidney, and if there is any evidence of defective function of these organs such as jaundice, or suppression of urine, even small doses are dangerous. In these circumstances minute doses, such as gr. 1/20 8-hourly, may give a full therapeutic effect.

Eukodal, Dicodid, and Dilaudid are recently introduced substitutes for morphine and heroin. The claim that they are free from risk of drug addiction has not been established, since several examples of addiction from their use have come to the speaker's notice.

Arsenobenzol compounds of the salvarsan and neosalvarsan type are perhaps the most valuable of modern therapeutic discoveries, but care is essential if toxic accidents are to be avoided. Thus impairment of function of the liver and kidney, and the presence of acute cerebral lesions of syphilitic type would be contra-indications for use. It must be remembered that an intravenous dose is not fully excreted until a fortnight has elapsed, so that the giving of full doses weekly is likely to give rise to toxic symptoms after a few doses. Accordingly when weekly doses are given they should be submaximal. Glucose premedication is a wise procedure. There are patients, moreover, who have an idiosyncrasy to aresenobenzol compounds.

Antimony.—Organic preparations of antimony and the potassium and sodium tartrates of this element have been used with success for tropical diseases such as kala-azar, bilharzia infections, and trypanosomiasis. The same precautions as for arsenobenzol compounds are indicated. A countess's fatal administration of Dr. James's fever powders (consisting of a full dose of potassium antimony tartrate) to her butler last century led to the comment that "there are more elements for success in the treatment of illness than a well-stocked medicine chest."

Bismuth preparations given intramuscularly and subcutaneously have valuable uses in the treatment of syphilis. There is a risk of severe exfoliative dermatitis in some allergic cases and the slightest sign of any skin reaction is an indication for complete discontinuance.

Gold.—Organic compounds of gold have a limited but useful place in the treatment of tuberculosis of lung, skin, and other organs. They have been recently introduced for the treatment of rheumatoid arthritis, but the risk of severe exfoliative dermatitis, occurring in not a few cases, is a warning for the utmost care in their employment. Other safer methods of treatment for chronic arthritis are preferable and more efficient. A few cases of toxic jaundice have been reported after the use of gold preparations.

Mercury.—Mercurochrome, an organic compound of mercury, has been used for septicæmic infections, but its use is not free from risk and has fallen into abeyance. Novasurol and Salyrgan are organic compounds of mercury having a powerful diuretic action when given intravenously. The toxic effect of mercury on the kidney calls for meticulous care.

Quinoline derivatives such as cinchophen (also known as Atophan, Agotan, Phenoquin, Atophanyl, Atoquinol) have been much employed for the treatment of gout and rheumatic conditions. They increase excretion of uric acid but sometimes even in small doses, such as grs. 5 three times daily for a week, they have a powerful toxic action on the liver, and fatal toxic jaundice has resulted. The use of these quinoline derivatives should be limited to carefully chosen cases, and their purchase by the public except under a medical prescription should be prohibited. Other allergic manifestations of the quinoline derivatives are nausea, vomiting, skin rashes, hepatic discomfort, and slight icterus.

Dekrysil is dinitrocresol, a drug recently put on the market in this country, and is similar to dinitrophenol which has been extensively used in America. Both increase the basal metabolic rate and indirectly cause loss of weight or "slimming." They are such powerful poisons to the liver and kidney cells that they should be withdrawn from the list of therapeutic remedies.

Coal-tar derivatives.—The human body seems to have a natural aversion to many of these, and to prefer similar compounds when produced by nature's processes. Thus in the early use of salicylates the natural product was commonly prescribed in place of the derivative from coal-tar; but the purity of the artificial products has been so perfected that there is now little if any difference between the two. It was formerly stated that the higher derivatives of the coal-tar or aromatic compounds were less toxic than the lower ones. This statement is true as regards corrosive action on the mucous membranes, but not as regards toxic action on the liver and kidneys. Some of the higher derivatives, such as the quinoline group, are powerful liver poisons, and others might be cited which have a much more toxic action in this respect than is supposed. It is interesting to note that complex aromatic compounds of vegetable origin such as quinine, cinchonine, and quinidine, have comparatively little toxic action on the liver and kidneys. Quinidine and its salts when introduced were regarded as dangerous toxic drugs, but experience has shown that their careful use is not attended with toxic manifestations.

Thallium acetate is another drug of such powerful toxic action that its use in medicine would be wisely abandoned.

Nirvanol, an organic preparation introduced a few years ago for the treatment of chorea, produces such toxic effects that the remedy may be worse than the disease. It is little employed at the present time in this country.

Aspirin is one of the most valuable and safe of simple remedies. Certain persons have an idiosyncrasy to it, as shown by tachycardia, urticaria, or digestive disturbances, and by these it should be avoided. Phenacetin and phenazone may be classed with aspirin as regards their uses and dangers.

Amidopyrin (Pyramidon) has been largely used, and is in most cases non-toxic. Recently a number of cases of agranulocytosis following its use have been reported, so that the indiscriminate purchase by the public is undesirable. Agranulocytosis has been found to follow the taking of barbituric acid derivatives in several reported cases.

Basal Anæsthetics.—The aim of these drugs is to produce a light anæsthesia of short duration, or a condition of mild narcosis and amnesia so that a much smaller amount of a general anæsthetic will be required. Avertin is in experienced hands perhaps the safest of them, and is especially useful in cases of highly nervous temperament (e.g., in hyperthyroidism). It must be remembered, however, that it belongs to the halogen group of the paraffin hydrocarbons, and has toxic effects similar to those of chloroform. In other words, it has a toxic action on the liver. Where hypohepatism exists it either should not be used or should be given in much reduced dosage. For example, in gall-bladder operations a half dose will produce a definite amnesia and enable the operation to be carried out under gas-and-oxygen with safety. Evipan intravenously produces a short and light anæsthesia, and is useful if contra-indications be carefully considered. Nembutal, Amytal, and Pernocton, given by mouth, have been extensively used, but should be avoided if there are indications of any allergic condition or idiosyncrasy. In hyperthyroidism a dangerous susceptibility may occur. Suppression of urine has also followed administration of this group of drugs as basal anæsthetics, and care must be taken that the kidney function is normal.

Basal anæsthesia has found a useful place in modern therapeutics, but the toxic action of the drugs employed calls for careful investigations into the possibility of any special susceptibility to their effect.

Hypnotic Drugs.—In mild cases of insomnia where drugs are needed it is well to be content with the simple non-toxic hypnotics whose action is well known. The sulphonal group of drugs, such as sulphonal, trional, tetronal, are effective hypnotics, but their slow absorption and delayed action has caused them to be replaced by more rapidly acting hypnotics such as the barbituric acid derivatives. The sulphonal group are toxic, and if given daily over long periods may by their delayed absorption give rise to cumulative effects and serious poisoning. At the present time their use is largely confined to asylum practice.

The barbituric acid derivatives are powerful hypnotics with rapid and certain action. During recent years they have perhaps been the most commonly employed of all hypnotics in cases of severe insomnia, and at least thirty are in use to-day. Because of their effective hypnotic action the margin between the therapeutic and toxic dose is small. The risk of habit formation or addiction is well known, though it is readily admitted that the addiction habit from these drugs cannot be compared with that of morphine, heroin, or cocaine for its compelling power on the patient, nor does the withholding of the barbituric acid drugs give rise to the serious withdrawal symptoms as in the case of morphine addiction. By their modification in constitution the barbiturates not only have the narcotic action of veronal but may have a toxic action on the lungs, kidneys, liver, and heart, as has been illustrated by many recent fatalities. The danger of death from self-overdosage is too well known to need emphasis. The insomnic patient is too often suffering from psychical pain and misery, whether due to his mental illness or perhaps the depression following a too long continued use of these drugs. Can it be wondered that he takes an overdose not caring what happens, and perhaps "hoping for the worst." It is well known that these drugs cause amnesia, and if the tablets are at hand in sufficient quantity repeated doses may be taken unconsciously, and so a fatal dose be taken unknowingly. All of these considerations point to care in the prescribing of barbituric acid derivatives, and to the essential need that they should only be taken under medical supervision by prescription and not be purchased indiscriminately by the public.

In conclusion, it may be said that toxic drugs place in the hands of the medical profession very powerful weapons for beneficent therapeutic use, but their employment must be tempered with knowledge and experience of their action, and careful investigations as to their safety in prescription for any particular case.

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY, SUBSECTION PROCTOLOGY

AT a meeting of this subsection on May 8th, Mr. ERNEST MILES, its president, being in the chair, a discussion on the

Conservative Surgery of Carcinoma of the Rectum

was opened by Prof. G. GREY TURNER. He desired, he said, to make it clear at the outset that he was not an advocate of conservative operations for malignant rectal conditions to the exclusion of other methods of treatment. He fully realised the responsibility of advocating a limited operation in the relatively few instances in which surgical aid was sought early. The subject was (to quote the words of one authority) "provocative of consideration." It might be possible in some cases, he thought, to do something between the cuff resection of Angus and the more radical procedures. For some time he had done a cuff resection, the cut being made inside the levator ani, finishing with an end-to-end anastomosis. In this operation he took away everything inside the levatores ani, including the perirectal tissues. Of 19 cases so treated one died a few weeks after operation from general deterioration following renal insufficiency, one died eight months after from general dissemination, six succumbed to actual recurrence, three died without recurrence, and the remainder were still alive and well. After this operation convalescence was rarely a cause of anxiety. One man left the hospital three weeks after operation perfectly healed and with his rectal continence restored. By periodical inquiry he had kept in touch with his cases. In 1931 analysis showed that the sensation of the rectum was normal in 9 of 10 cases, in 9 there was adequate retention of flatus, in 1 the retention of flatus was not so good, and in that case the sphincter was divided to the anus. Most of the patients could retain their evacuations in diarrhœa as in normal times, and most of the ten possessed normal capacity for straining. In 17 cases the condition of the sphincter was assessed. It was perfect in 9, adequate in 7, and incompetent in 1, a man who had sarcoma of the rectum with early recurrence. Looking at the condition of the scar in the rectum afterwards, in seven of the cases there was little indication of any incision. The scar did not appear to interfere with the functions of the rectum. One effect of the operation was to straighten out the rectum and leave it without an ampulla. He did not cut through the bone, but disarticulated the coccyx; the operator should, he thought, not be embarrassed by an undue desire to save bone. For the anterior wall mattress sutures should be used. After completing the anastomosis he placed tissue drains into the cellular tissue, and the muscles were repaired by interrupted catgut sutures. In most cases he did not carry out a preliminary colotomy; in 4 it was done as a preliminary, in 11 it was not done, though in 2 it was needed later. Analysis of 14 cases of fæcal fistula showed that this healed in one month in 2, in three months in 10; 1 healed only after colotomy, 1 did not heal at all. For papilloma in a premalignant stage the cuff operation seemed to be admirably suited; some forms of stricture were also suitable for it. He had no use for resection over a tube.

Mr. H. H. **Rayner** (Manchester) described the conservative operation for growth in the upper third of the rectum, below the pelvi-rectal junction, the lower edge of which was readily accessible to simple digital examination. This operation was conservative only in the sense that the sphincteric mechanism of the anal canal was preserved for the restoration of a functioning anus. If such a procedure could be shown to offer a fair freedom from risk, with prospect of survival equal to that of the established operations, it might, he thought, be regarded as a real advance. The upper end of the rectum was a common site for growths. If it was surgically legitimate to perform a perineal excision for ordinary ampullary carcinoma, with its necessarily restricted removal of bowel and mesenteric tissues above the growth, it was, he suggested, also legitimate, when removing the rectum for high carcinoma, to preserve the musculature of the anal canal. While the risk of this operation to life was somewhat higher than that of a purely perineal operation, the risk was not greater than that of the abdomino-perineal operation. The so-called anterior resection of the rectum left the patient with an intact but functionless anal canal, and could only be justified on grounds of expediency.

The operation he was describing was introduced by Sebrecht of Bruges. It was done in two stages at the same sitting. The first was exactly like the abdominal stage of the abdomino-perineal operation, with the fundamental difference that the pelvic colon was not divided, but a suitable point was selected, usually in its lower third, for later implantation at the anal orifice. The surgeon must satisfy himself that the colon above was sufficiently long and mobile to allow of this point being brought down to the anus without undue tension, and that the blood-supply for the future anus was adequate. The mesocolon was then divided at this point from the bowel to its root, the superior hæmorrhoidal vessels being ligatured. The rectum was freed on all sides below the pelvic peritoneum, so as to facilitate the second stage of the operation. The peritoneal floor of the pelvis was then reconstructed, a gap being left in its centre through which the lower pelvic colon was passed. The edges of this gap were sutured to a point on the pelvic colon as high as possible above the area selected for the new anal orifice. The abdomen was closed without drainage, and the patient placed in a tilted lithotomy position; the lower rectum was washed out, to clear it of debris following the manipulations, and firmly packed with gauze. Next the anal orifice was closed by a purse-string suture, the ends being left long for subsequent traction.

A circular cut was then made round the anal orifice at the muco-cutaneous junction, and the mucous membrane of the anal canal dissected up as a cylinder to a height of about 2 in., special care being exercised to prevent button-holing. A cut was made backwards at the level of the anorectal ring through the muscular walls of the rectum until the subperitoneal space of the pelvic cavity was entered, thus establishing communication with the previous field of operation. The structures still holding the rectum laterally and in front were divided, and the lower rectum being freed, the bowel was drawn down through the sphincters.

Mr. Rayner said he had performed the operation for intrinsic carcinoma of the rectum on four patients. One of them, a woman aged 66, on whom he operated in unaccustomed surroundings, died as a result of the operation. The other three recovered. One man died 20 months afterwards with what the neurologist described as true progressive bulbar paralysis, there being up to death no sign of metastasis or local recurrence. Both the others (women) were still in good health three years and eight months after operation respectively. Both patients had gained in weight.

Mr. W. B. **Gabriel** agreed that occasional cases of carcinoma of the rectum could be cured by local excision; the crux lay in the selection of suitable cases. After a careful review of cases at St. Mark's Hospital, he considered the only cases suitable for conservative resection in the manner carried out by Prof. Grey Turner were those which came into the "A" group of Dr. Cuthbert Duke's classification. Of 142 cases submitted to operation only 16 (11 per cent.) were considered suitable for local treatment. Of a large number of rectal cancer cases only some 5 per cent. fell into group "A." Conservative resection should be reserved for cases in which colostomy was refused or there was some difficulty in the patient's mental or economic position. Cancers were frequently double, polypi had a cancerous tendency; by a more thorough operation the surgeon knew he was reducing the risk of another cancer forming in vulnerable tissue. By the conservative method it was technically difficult to mobilise the entire rectum, especially the anterior wall, and bring it down to make a good anastomosis. A third reason against it was the difficulty in assessing the depth of the spread.

Sir **Charles Gordon-Watson** said he rarely encountered cases at such an early stage that conservative or local operation could be reasonably considered. It must never be forgotten that one was dealing with a potentially malignant rectum; the local operation meant removing only part of the malignant area.

Mr. J. P. **Lockhart-Mummery** suggested that the history of proctology ran in circles. The operation now described by Prof. Grey Turner was done 25 years ago, but with improvements in technique, preparation, and anæsthesia results might now be better. He had used the local operation for stricture and for adenoma. In recent years he had not returned to it for carcinoma as there was a 40 per cent. risk of recurrence. In the operation described by Mr. Rayner the piece of bowel brought down was liable to slough, however carefully the operator might think he had preserved the blood-supply.

Mr. CYRIL NORBURY related a case in a girl, aged 18, of villous papilloma, probably premalignant, on whom he did a cuff resection with end-to-end anastomosis, but without preliminary colostomy. Later he had to do a perineal excision of the rectum.

Dr. CUTHBERT DUKES said there were two schools of thought among surgeons each of which sought the views of pathologists in their support. He would suggest two useful generalisations. Cancer of the rectum remained a local disease until it spread by direct continuity into the perirectal tissues, and there was a fairly long period before this spread occurred. When a surgeon tried to estimate how far a growth had spread by direct continuity, he was apt to under-estimate that spread, as shown by subsequent microscopy.

Mr. W. TURNER WARWICK described a method by which, when doing local resection, the sphincter could be preserved.

In reply, Prof. GREY TURNER said that the number of cases suitable for the conservative operation was likely always to be a small proportion, perhaps not more than 3 per cent. With greater facilities for examination and improved technique he hoped it could be increased.

Mr. RAYNER agreed with the view that recent advances led to better results from less drastic procedures. His own results from the operation he had described for high rectal carcinoma had been so good that he intended to continue.

REVIEWS AND NOTICES OF BOOKS

Problems of Anæsthesia in General Practice

By D. H. LUKIS, M.D. London: Hodder and Stoughton. 1935. Pp. 158. 7*s*. 6*d*.

THIS is a thoroughly sensible little book which, in essay form, was awarded the Sir Charles Hastings prize of the British Medical Association. Almost every page gives evidence of the sound judgment of the writer, and every doctor whose duties include an occasional administration of an anæsthetic should read it. Dr. Lukis ignores no difficulty with which the general practitioner may have to cope when he is required to give an anæsthetic, and points unerringly to the best way out of every dilemma which she describes. Moreover, she defines clearly the circumstances in which the giving of an anæsthetic should be left to an expert. Having defined the characteristics of an ideal anæsthetic and some of the special difficulties of general practice, she proceeds to discuss the estimation of anæsthetic risks, the choice of anæsthetic, and the problems presented in special operations, in preparation of patients and of administration, improvisations and substitutes, and post-anæsthetic conditions.

The sections in the book which deal with the urgent and trying behaviour of patients under anæsthesia could be read with profit by specialists, but for the most part it is with the problems of the occasional anæsthetist that she is concerned. The specialist nowadays has to be more or less familiar with all methods and is little hampered by questions of expense and portability; the practitioner's position in these respects is far otherwise. He is shown here how to use to best advantage the apparatus and the skill that are likely to be in his possession. Dr. Lukis gives a list of what he should carry; this does not include nitrous oxide, but he must be prepared to use this gas where it is provided, whenever the case is deemed suitable. Magill's nasal tubes are part of the routine outfit suggested, and Dr. Lukis strongly recommends the practitioner to familiarise himself with their use. Generally speaking, in common with most of her colleagues, she has found that induction by CE mixture followed by open ether is the most valuable routine method. She is fully alive to all the latest introductions in anæsthetic administration, and shows logically where they fail to earn the reliance of the general practitioner anæsthetist. She gives reasons for her view that avertin is essentially a specialist's anæsthetic; evipan, however, she regards as a valuable agent in many situations in which the practitioner may find himself.

The author's sympathetic regard for the patient's point of view is manifested by her analysis of the nature of pre-anæsthetic fears in 400 consecutive patients; of these the fear of (*a*) never waking up, (*b*) choking or suffocation, and (*c*) feeling pain are the most common, each accounting for some 20 per cent. of the cases. The fear of (*d*) the theatre, surgeon, and of instruments is, in Dr. Lukis's view, somewhat exaggerated by advocates of rectal and intravenous anæsthesia; in her series some 12 per cent. experienced—or confessed—to it. Of the rest, 9 per cent. had a horror of (*e*) making fools of themselves, 7 per cent. disliked (*f*) the idea of losing consciousness, 6 per cent. dreaded (*g*) post-anæsthetic complications, and 1 per cent. (*h*) admitted no fear. The author notes that three of the four patients in this last group showed a definitely exaggerated excitement stage, indicating that their fears were probably repressed rather than absent. These figures are given merely to illustrate the fact that one patient's ideal anæsthetic may be another's bête noir, and other things being equal Dr. Lukis would give local anæsthesia to groups (*a*) and (*f*) and make a special effort to avoid it in group (*c*); non-inhalational anæsthesia or premedication is called for in group (*b*) and contra-indicated in group (*e*). Dr. Lukis, in common with many anæsthetists, clings to status lymphaticus as an entity and does less than justice to the pathologists whose denial of its existence follows logically on the demonstration of the remarkable variations in size of the thymus gland in normal subjects.

The book is written in a crisp and pleasant style with apposite case-notes. The practitioner's point of view is always remembered. He is urged to make certain, before attempting to give an anæsthetic, that he has the confidence of the three important persons concerned—the patient, the surgeon, and himself. If the first and the last are satisfied of his competence, the surgeon remains for consideration. Dr. Lukis's attitude to this delicate problem in professional relations may best be given in her own brisk words, addressed to the anæsthetist—"the surgeon has a hard and exacting job and it is not fair to add any additional burden. Your duty to him is to provide him with a specialist anæsthetist if he shows signs of wanting one. Should he do it too often, examine your anæsthetic technique, and, if it satisfies you, change your surgeon."

The Single Woman

By ROBERT LATOU DICKINSON, M.D., and LAURA BEAM. London: Williams and Norgate Ltd., and Baillière, Tindall and Cox. 1934. Pp. 469. 21s.

THIS book is based on a study of 1078 case records of single women who were treated as patients by Dr. Dickinson. The authors regard it as a continuation of an earlier work, a study of a thousand marriages (see THE LANCET, 1932, ii., 523), and desire that it should be read in conjunction with the topographical atlas of human anatomy noticed in our columns on April 20th last. The book now under review has much the same merits and defects as the study of married women. Dr. Dickinson is a close and accurate observer, whose artistic gifts are now almost as well known to the medical public of this country as to Americans. His most valuable and distinctive contribution to medicine is the correlation which he discerns between the sex life of the woman and her genitalia. In his words, " the female organs of generation, especially the external, largely document the sex life." The relation is stressed in the numerous and interesting case-histories contained in this book, and in the drawings of the topographical atlas.

The average age of the women in the present series is 26, their educational opportunities rather above the average, their health rather below. Venereal disease and pregnancy occurred three and four times respectively in every hundred women. The length of time during which they were observed averaged a year—considerably less than in the series of married women. One in five patients had practised what the author calls " auto-erotism," and there were 28 recorded cases of homosexuality of whom all but 2 ended with heterosexual experiences. An interesting feature of the book is Dr. Dickinson's analysis of the changes in social outlook, dress, and sexual habit which have taken place since the year 1893. The articles of apparel customarily worn by women in that year are shown in a diagram. Five bands were worn round the waist, and it is estimated that all the layers fastened end to end would make a bandage 34 ft. long, the circumference of the waist being taken as 24 in.

Even more apparent than in previous books are the defects of Dr. Dickinson's literary style. These fortunately do not affect his case-histories which read easily and pleasantly; they particularly relate to his summaries, deductions, and conclusions. It is no exaggeration to say that some of these are unintelligible. An interesting chapter on virginity begins with the statement "The bystander becomes virgin again when he lights a candle before the Virgin's shrine." What does this mean? In a chapter on the engagement occurs the following passage: "A professional woman 27 years old is a state of mind. Three or four years' preparation for self-support accepts a discipline which presents other than instinctive values. Choice of a profession is a choice against marriage in so far as it removes uniqueness and places marriage among alternatives." Dr. Dickinson would perform a very welcome service to his many loyal readers if he would write grammatically, observe the elementary rules of punctuation, and refrain from stating his conclusions in poetic or mystical language.

The findings of this series must not be taken as typical of the average unmarried woman, for they are based upon selected material. The women here considered became subjects for investigation by reason of their having attended a gynæcologist for treatment of some dilemma in his province. Nevertheless, the study has much general as well as medical interest.

The Vitamin B Requirement of Man

By GEORGE R. COWGILL, Ph.D., Associate Professor of Physiological Chemistry in Yale University. Published for the Institute of Human Relations by Yale University Press. London: Humphrey Milford, Oxford University Press. 1934. Pp. 261. 18s.

IN 1923 Prof. Cowgill conceived the idea of seeking to ascertain how the vitamin B (B_1) requirements of man and some of the lower animals differed, and whether any discoverable general principle underlay the mode of their differing. This book gives an account of his researches in the ensuing years and of the conclusions which he reached. A single preparation of dried yeast was used throughout as source of the antineuritic vitamin B_1, and in terms of this, the quantitative requirements of the dog, rat, mouse, and pigeon were ascertained. From these results a general formula was established, relating the vitamin requirement to the body-weight and metabolism of the species. Attempts are made to ascertain whether this formula would hold good for the human species. For this purpose, the vitamin B_1 values of a great number of foodstuffs are collected from various sources into a Table (Table 21), where they are expressed in terms of the author's special preparation of dried yeast. These values are then applied to the estimation of the vitamin B_1 values of human diets on which beri-beri is known to have, or not to have, occurred. As a result, the incidence of beri-beri on these diets is shown to be not just inversely proportional to the vitamin B_1 intake, but to be influenced, in addition, by the relative calorie intake and body-weight, in accordance with the author's formula. In short, the formula works when it is practically applied, in that it harmonises data which are otherwise somewhat conflicting. On page 105 the author gives a factor by which the vitamin B_1 value of foodstuffs, expressed in terms of his yeast preparation, can be converted into international units; this makes the values for the various foodstuffs, collected in Table 21 much more universally useful. A bibliography and good table of contents is supplied but no subject index.

Methodik der Vitaminforschung

By CHRISTIAN BOMSKOV, Ph.D., Chemiker an der Universitätskinderklinik, Kiel. Leipzig: Georg Thieme. 1935. Pp. 301. RM.24.

Dr. Bomskov's book is an encyclopædic work on the biological, physical, and chemical methods of estimating vitamins. It contains a vast amount of useful material but this is not critically handled, so that the reader, though practically certain to find the details of any method he is seeking, does not receive much guidance in selecting a method if his mind is not already made up. The international standard preparations and units are mentioned, but might well have received more attention. The indispensable necessity of making a *simultaneous* test with the standard, in every biological vitamin assay which makes any claim to accuracy does not seem to be fully appreciated by the author. An index and a very full table of contents make it easy to find any reference required.

THE LANCET

LONDON: SATURDAY, MAY 18, 1935

THE MEDICAL CURRICULUM

Some four years ago the Board of the Faculty of Medicine of the University of London had under consideration a number of requests from various sources for modifications in the medical curriculum. This circumstance brought to a head the feeling in all medical faculties and institutions that the existing course of medical study required modification chiefly in the direction of making the work of the student less complicated while ensuring continuity in study—a welding both of what had been learnt with what was being learnt and of laboratory training with pathological study. The London faculty, aware of the dissatisfaction existent in other universities, and already officially expressed at Cambridge by certain changes in the educational curriculum, invited that University, the University of Oxford, and the English Royal Colleges to a conference "to consider the defects of the medical curriculum and to make suggestions for reform." The invitations having been accepted, a representative membership was constituted, one of whose first actions was to invite the coöperation of the Society of Apothecaries of London. The Medical Curriculum Conference elected Lord Dawson of Penn chairman; the members of the conference were named on their appointment in The Lancet (1932, ii., 1283), and were recognised as an authoritative body. They got to work about two years ago, and the report which is issued this week shows how industriously they have discharged their difficult task.

The conference recognise that the object of the medical curriculum in general should be to give the student of average ability such knowledge and such education as will enable him to approach and enter practice with some confidence and with a legitimate hope that "his scientific outlook on health and disease should enable him to learn from subsequent observations and experience." The idea that the newly qualified man has completed his medical education being thus pleasantly contradicted, it was held that the curriculum should be designed to make him a safe adviser, though State registration as a doctor cannot transform him into an accomplished therapeutist. The multiplicity of special courses of instruction followed by examinations are found to interfere with just that sequence in study which is desired, while the memorising of details in connexion with special branches occupies time which could better be employed by the student along wider lines. Reform in these directions forms the subject of the main recommendations, and how they can be carried into effect is indicated by the body of the report, in which the time occupied in premedical studies, the intermediate studies, and the actual clinical work is considered in detail. Recognising that the general education of the intending medical student is of the first importance in the framing of a curriculum, the conference took evidence from the obvious sources, and it was to the effect that the education of the advanced schoolboy need not be neglected during preparation for preliminary science examinations; but they came to the conclusion that, in order to allow sufficient time for general education and to avoid the danger of too early specialisation, medical studies proper should not be begun before the age of eighteen. On the difficult subject of the intermediate studies the report is admirable. While not recommending that any change should be made in the present arrangement, whereby the first two years of the medical curriculum are devoted to the study of anatomy and physiology, they suggest methods of rearrangement, relying on concerted action among the teachers, so as to construct a course which should be "more harmonious, consecutive, and interesting." They consider that the work of the student during the intermediate period should be arranged by a board of teachers representing anatomy, physiology, chemistry, biochemistry, pharmacology and pathology, and they indicate how modifications could be introduced, which are summarised in the final recommendations. The activities of such a board, intent on demonstrating to students the close inter-relation of the separate facts to be mastered and the large amount of common ground to be worked over, should be fundamentally valuable.

Two *brief statements* will be received by students and teachers alike with gratitude. The conference hold that in the past too much time has been spent and too great a stress has been laid on memorisation of the structure and details in anatomy for examination purposes; and of physiology it is stated that while coöperation with the clinical staff of the teaching hospital to which the school is attached may prove essential, the student at this stage should not be receiving actual instruction in medicine but rather learning how his physiological equipment ought to be interpreted in terms of therapeutics. The heads of physiology departments, the conference suggest, should have access to patients and be able to enlist the services of members of the clinical staff to give appropriate demonstrations; but the student at such demonstrations should be shown patients not as examples of disease, however typical, but as examples of deranged function. These words face the difficulties inherent in prescribing a curriculum, in which duly proportional opportunities should be given to the acquirement of facts and to the employment of the lessons learned. For such joint demonstrations would introduce the student to that all-important side of his future calling, the consideration of the patient as a fellow creature rather than as a case. That the student is himself alive to this aspect of his training is evident from a discussion on a later page of this issue. The report is a wise one and its presentation excellent.

ÆTIOLOGY OF ACUTE RHEUMATISM

DURING the past thirty years there have been many attempts to discover the causal agent of acute rheumatism. The great majority of these have ended in incriminating the streptococcus. No one would deny that the streptococcus is in some way concerned with the pathogenesis of this disease; the constancy with which streptococcal tonsillitis or pharyngitis precedes acute rheumatism is sufficient evidence of this. But there are grounds for doubting that the streptococcus is the prime cause. First of all there is the fact that all three main types of streptococci have in turn found favour as ætiological agent. The "micrococcus rheumaticus" of POYNTON and PAINE was in all probability *S. viridans;* BIRKHAUGH favoured the non-hæmolytic streptococcus; and the last few years has seen *S. hæmolyticus* given pride of place. And then there is the histological evidence that tells us that the tissues of man react to the "virus" of acute rheumatism in a quite specific manner, giving a type of lesion not found in other streptococcal infections and not capable of reproduction in the tissues of other animals by the various "rheumatic" streptococci. All this makes it questionable whether the streptococcus is the whole story, and in our last issue Drs. SCHLESINGER, SIGNY, and PAYNE, of Great Ormond-street Hospital, who have hitherto been at one with COBURN in considering the hæmolytic streptococcus as the prime cause of acute rheumatism, give other reasons for thinking this view unsatisfactory.

The idea that acute rheumatism is a virus disease is not a new one, and unsuccessful attempts have been made to demonstrate this theory of its origin. Very suggestive evidence in its favour, however, is brought forward this week by SCHLESINGER and SIGNY, now collaborating with Dr. RUSSELL AMIES of the Lister Institute. The means whereby the viruses of psittacosis and vaccinia were identified with the minute bodies seen in stained preparations of virulent material have been adapted to the present investigation, and pericardial and pleural fluids from cases of acute rheumatism have been submitted to fractional and high-speed centrifugation in an endeavour to find out whether these exudates contained demonstrable virus particles. Pericardial fluid from 7 cases was examined in this way and in the deposit obtained from 6 of them particles were seen which, from their uniformity in size and from their appearance in stained preparations and when viewed by dark-ground illumination, were thought to be virus particles. The 6 fluids which gave this positive finding were all from acute cases in the second or third week of the disease; the remaining sample in which no such bodies were found came from a chronic case of some months' standing. Mr. J. E. BARNARD has examined these bodies by the special methods which he has devised and applied so fruitfully in the study of other viruses; and although he hesitates to state definitely that the particles represent a virus he thinks that in all probability they do. But SCHLESINGER and his colleagues have carried the investigation a stage further: for they have also shown that formolised suspensions of the bodies obtained from the pericardial fluid are agglutinated specifically by the sera of patients suffering from acute rheumatism. This part of the work has been carried out by Dr. AMIES, whose investigation of the viruses of variola-vaccinia, zoster, and varicella has made him thoroughly familiar with the difficulties and pitfalls of such inquiries. The experiments have been fully controlled and the agglutination of these bodies appears to be specific.

Does this mean that the virus ætiology of acute rheumatism is established? The investigators are careful to point out that they regard their findings as no more than suggestive. A good deal more requires to be done and in particular renewed attempts to reproduce the disease in experimental animals will have to be undertaken. But supposing that acute rheumatism were known definitely to be due to a virus, would one be in a better position to combat it? That is no easy question to answer. If the causal agent of rheumatism is a virus, then obviously it is one of those, like herpes, which, when it invades the tissues of man, does not incite a solid immunity but leads to what one might term a state of armed neutrality. This delicately adjusted balance of power between host and invader is readily upset by such factors as intercurrent infection, with unfortunate results for the host. Whether or not in virus infections of this type one can by specific means weight this balance more definitely in the host's favour is as yet uncertain. To attempt to predict the possibility of achieving this in acute rheumatism would merely land us in the realm of conjecture.

THE DURATION OF LIFE

THE Registrar-General and those who quote him are not the only students of the duration of life and the causes of death. The experimental biologist collects statistics from controlled communities—"cohorts" is the technical term—of flies, slugs, fish, and such creatures, and asks the question "why do they die?" A recent paper[1] from RAYMOND PEARL's laboratory illustrates one method of treating these statistics. The survival-rates per 1000 initial members of a cohort are plotted against time and different species are found to yield different curves. In the first type nearly all the individuals survive to a certain age and then die off within a short time; either they all run down together like a batch of similar clocks, or they all explode together like a batch of bombs with time-fuses, or they are all destroyed together by an outside agency. Such a curve is found for the wheel-animalcule proales, which would appear to be constitutionally either a clock or a bomb, and it can be obtained from a cohort of flies if they are subjected to starvation—an outside agency. In another type of curve a steady mortality-rate reduces the cohort progressively from youth to old age, until a mere handful remain; the age of the individual per se has nothing to do with the probability of its dying. From that it is argued that the predominating cause of death is not constitutional, but environmental and accidental; so many individuals per centum are destroyed every day by what the authors call "major catastrophic environmental stoppages of the individual life." An approximation to this type of curve is found in certain aquatic organisms (hydra), which also have the characteristic of continuous growth; they never grow old, they just grow bigger till they are accidentally killed. A third group of curves is intermediate between those two types, and includes the mouse, the roach, and wild drosophila. The human curve, which is less simple than those studied in laboratories, probably belongs here too.

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[1] Pearl, R., and Miner, J. R.: Quart. Rev. of Biol., 1935, x., 60.

From these curves, and kindred data, an attempt is made to deduce the factors determining the occurrence of natural death, and its distribution in time (age). Five of them emerge: (1) endogenous senescence, or the running down of the clock; (2) exogenous senescence, or the accumulating effect of the wear and tear of life, the "environmental buffetings"; (3) the genetic constitution of the individual—whether he is a "Ford" or a "Rolls"; (4) the rate of living, which is taken to include all the functional activities of the organism; and (5) the risk of immediately lethal accidents. These five factors may be simplified to three—namely, genetic constitution, activity (in the broadest biological sense of the term), and environment. In other words, and applied to the human species, this means that a man may live long because he has a strong constitution and can withstand a severe environmental buffeting and a high rate of living, or alternatively because he lives a gentle sheltered life that spares his poor constitution—always provided he escapes death by accident in his youth or his prime. Such a conclusion, to the observer of mankind, would seem quite obvious and not at all new, but it is most interesting to find it emerging even imperfectly from a mathematical study of the vital statistics of slugs and flies.

ANNOTATIONS

BRITISH POSTGRADUATE MEDICAL SCHOOL

ON Monday last the King, who was accompanied by the Queen, declared open the British Postgraduate Medical School. His Majesty was received by Sir Austen Chamberlain, chairman of the governing body, and Lord Snell, chairman of the London County Council, which is coöperating actively with the Government and the University of London in the promotion of the institution.

Sir Austen Chamberlain, in asking His Majesty to approve of the efforts made by those engaged in the creation of the school and to declare the school open, stated the prolonged and laborious inquiry which had led to the practical result. Fourteen years ago, he said, a committee on post-graduate medical education, presided over by Lord Athlone, now chancellor of the University of London, reported that a school attached to a London hospital should be devoted solely to post-graduate education which would be a school for the university and should receive substantial financial assistance from the treasury. These recommendations of Lord Athlone's committee have been exactly carried out and Sir Austen described the tasks now before the school in the following words: "first, to enable medical men in general practice to bring their knowledge up to date, and to familiarise themselves with the latest developments in diagnosis and treatment; secondly, to provide instruction for graduates desiring to pursue special studies in the higher branches of the profession; thirdly, to promote research and to advance medical knowledge." He added that it was the ambition of the directors of the school to make of it a great centre of British medical science, drawing students and teachers alike from all parts of the Dominions for mutual instruction and the promotion of the relief of human suffering.

The King said, in declaring the school open:—

> "It is with great pleasure that the Queen and I have come here to-day to open the British Postgraduate Medical School. The provision within the University of London of a new centre for clinical teaching marks a notable advance in the continuous effort of the medical profession to increase its capacity for service to mankind.
>
> "I am especially glad of this opportunity to show my gratitude for the skill and care which I and my family have received from members of that profession, and not least from distinguished members of the governing body of this school.
>
> "You have reminded me that a foundation such as this was recommended by a committee presided over by Lord Athlone. A recommendation of the same committee resulted some years ago in the creation, with generous assistance from the Rockefeller Foundation, of the great London School of Hygiene and Tropical Medicine. Lord Athlone must be gratified, as Chancellor of the University, to take part in the realisation of the last stage of his far-reaching plan.
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> "While the two schools trace back to the same origin there is a further bond of union between them. The foundation-stone of each was laid by the Chancellor of the Exchequer, who, as Minister of Health, had so large a share in their evolution, and you, Sir Austen, following a distinguished family tradition, are chairman of each board of governors.
>
> "It is my earnest hope that this school, with its happy union of ward and laboratory, university and local authority, drawing students and teachers alike from all parts of our Empire, and I trust from regions even more widely spread, may prosper under God's blessing. May it play an imperial rôle in the winning and dissemination of medical knowledge, in the relief of suffering among my peoples in this country and overseas, and in enabling the doctors of all lands to come together in a task where all must be allies and helpers."

Following His Majesty's declaration that the school was open, numerous presentations of members of the governing body and others directly concerned in the movement were made by Sir Austen Chamberlain. The King and Queen then made a complete tour of the building, a strenuous task as will be seen by reference to the description published in another column (vide p. 1172). Their Majesties visited the clinical lecture theatre, the library, and the various departments, where the directors were presented to them: Prof. Francis Fraser, director of the department of medicine; Prof. Grey Turner, director of the department of surgery; Prof. James Young, director of the department of obstetrics and gynæcology; and Prof. E. H. Kettle, director of the department of pathology. Each director in turn presented his readers, while among others presented were Mr. Edwin Bax, F.R.I.B.A., the architect, Dr. Duncan White, radiologist of the hospital, Mr. Leslie Clark, Ph.D., physicist to the London County Council, and Sir Thomas Carey Evans, medical superintendent of the hospital.

PROPHYLAXIS AND EXPOSURE IN MEASLES

THAT the results of the sero-prophylaxis of measles may depend upon the conditions under which exposure to infection takes place is emphasised by some observations of Karelitz and Schick.[1] Serum was obtained from five adult immunes. The samples were not pooled but were injected individually in a dose of 6 c.cm. in two groups of susceptible children of comparable ages exposed to measles over similar periods; one group, however, consisted of children in hospital and the other of children in their own homes. It was found that the protection afforded by each sample was much greater in the institutional than in the familial group. The combined groups comprised 134 children. Comparison of the conditions of exposure showed that the protection-rates were 87 and 29 per cent.; the attenuation-rates 13 and 22 per cent.; and the failures 0 per cent. and 49 per cent. in the hospital and familial groups respectively. Similar differences have been reported in the results obtained from convalescent serum by Park and Freeman, and by Levinson and his co-workers, and these are quoted by the authors. The discrepancies in the results are diminished when larger doses of serum are employed in the case of children exposed in their homes. Thus, in further trials, 6 c.cm. of serum in an institutional group produced results closely similar to those already mentioned; but the injection of 8 c.cm. of adult serum in a familial group afforded a protection-rate of 46 per cent., an attenuation-rate of 43 per cent., the failures either to prevent or attenuate dropping to 11 per cent. Still larger doses of from 12–25 c.cm. of adult serum produced correspondingly more favourable results.

Contact in home life is more intimate than in hospital wards where exposure may be very unequal. In hospital some children may escape infection entirely; others be but slightly infected; while others again are infected intensively and repeatedly throughout the period of exposure. Karelitz and Schick observe that the differences in degrees of exposure between familial and hospital groups are accentuated in those hospitals provided with cubicles or where an isolation technique is observed. An analysis of the results obtained from the injection of 6 c.cm. of adult serum in a series of 106 children of from 2 to 6 years of age all exposed to measles for periods of from 2 to 5 days showed that in the case of children whose home conditions were good, the protection- and attenuation-rates were 58 per cent. and 23 per cent., 19 per cent. being failures. Where the home conditions were bad these rates were 0 per cent., 27 per cent., and 73 per cent. respectively, whereas in a hospital group they were practically reversed, protection being attained in 83 per cent. and attenuation in 17 per cent., there being no complete failures. An important factor in maintaining or enhancing the level of immunity to diphtheria amongst those, such as nurses in fever hospitals, who have become Schick-negative as the result of active immunisation is the frequent reception of small doses of infection which by acting as stimuli raise the antitoxic titre of the blood. Karelitz and Schick relate the results of an attempt to increase the immune antisubstances of adults by re-exposing them frequently and intimately to patients during the first few days of severe attacks of measles. Four volunteers were bled *before* and 8 and 21 days *after* the last of thirteen exposures to the disease of from 30 to 60 minutes' duration. Sera obtained before and after reinfection were injected into a large number of young children presumably effectively exposed to measles. When the group of children was considered as a whole the results appeared to be greatly in favour of the samples obtained after reinfection, but on further investigation the same discrepancy between institutional and familial exposures appeared and largely reduced the apparent superiority of the reactivated samples. By increasing the dose of the pre- and post-reactivated samples employed in the case of children exposed at home from 6 c.cm. to 8 c.cm. the advantage in favour of the reactivated samples became inappreciable.

While in institutional epidemics of measles all susceptible children may develop the disease after the first exposure, the authors remark that this occurs far more commonly as the result of successive exposures. This is, of course, quite true, and if it is a question of testing the value of any batch of convalescent or adult immune serum, which is usually pooled, doubtless the more rigorous conditions provided by familial contact are to be preferred as they suggest, but in the testing much valuable serum must be expended. In any case the medical administrator of a sick children's ward must be pragmatic; his main object is to reduce the effects of cross-infection to a minimum. To this end he will segregate the infective patient at the earliest possible moment and without relying unduly upon a past history of attack, only too often a broken reed, use his precious stock of convalescent or adult serum primarily in an attempt to prevent the expected attack amongst children under 3 years of age. If the serum which he has at hand is of attested potency so much the better. Whether the success attained should in part be credited to ineffective exposure is not of great practical importance.

TUBERCULOSIS IN DOMESTIC PETS

WHILST intensive study and attention has long been focused on tuberculosis in cattle, and the importance of the bovine type of infection in causing both abdominal and meningeal lesions in children has been fully recognised, relatively little emphasis has been laid on the possibility of the disease being acquired from domestic animals. Dr. A. Hjärre and Dr. C. W. Herlitz have carried out what may therefore prove to be a fruitful piece of work[1] in investigating a number of cases of associated canine and human infection. They point out that tuberculosis is by no means rare either in cats or dogs, animals which are frequently the intimates both of children and adults. It is difficult to assess the actual incidence of the disease in domestic animals, as the majority die at home without the assistance of a death certificate. Also, the figures obtainable from the various veterinary institutions on the basis of post-mortem examinations performed show considerable differences. Thus in Berlin (1925) the percentage of tuberculous dogs was 0·3, of tuberculous cats 2·0, while the corresponding figures for France (1927) were 5·6 (dogs) and 13·5 (cats). Dogs under two years of age are, however, more frequently found affected than older animals, and the disease is rare in dogs over seven years old. Tuberculosis is commoner in male than in female dogs; sheep dogs, fox-terriers, and airedales appear to be the most susceptible breeds. Hjärre and Herlitz report in detail six cases in which the occurrence of tuberculosis in a human being and in a dog or cat living in the same household suggests more than a coincidental relationship. Notes on two of the cases follow.

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[1] Karelitz, S., and Schick, B.: Jour. Amer. Med. Assoc., March 23rd, 1935, p. 991.

[1] Acta pædiat., 1935, xvii., Supp. I., p. 141.

A poodle had lived for seven years in the house of a healthy mistress and had been well throughout this time. From the spring to the autumn of 1932 a woman lived in the household; in May, 1932, she began to cough, and in the following February, 1933, she died with extensive cavitation of the lung and tubercle bacilli in the sputum. She had been very intimate with the poodle, whom she was in the habit of feeding from her own plate. In October, 1932, the dog began to cough, and in November was diagnosed at the veterinary college as suffering from active pulmonary tuberculosis. The diagnosis was confirmed at post-mortem examination in March, 1933.

In January, 1932, a dog who had lived in a household for some years began to cough, lose weight, and become anæmic. A diagnosis of pulmonary tuberculosis was made and confirmed at autopsy when the dog died in May, 1932. Tubercle bacilli in the tracheal secretion were of human type. A month after the dog's death a girl of 14 in the house became affected with erythema nodosum. In this family, however, the mother had suffered from pleurisy in 1930, but had been free from cough and all symptoms since this time.

In three of the cases of animal infection in which the organism was isolated, it was found to be of human type. Whilst it is possible that the tubercle bacillus may become non-virulent to human beings by passage through a dog or cat, the Scandinavian investigations more than suggest the possibility of infection of animals from a human source, and make a case for considering the possibility of human infection from domestic animals. Coöperation of doctors with local veterinary institutions would be valuable.

WORK AND NOISE

INTERFERENCE by noise with the capacity to hear produces a disproportionate mental irritation. Hence a tendency exists a priori to ascribe a maleficent influence to noise—which may be defined as an excess of unwanted sound. When efforts were undertaken by the Industrial Health Research Board[1] to measure this influence, they disclosed that it may readily be exaggerated, if estimated by its effect upon industrial work. Like any other unvarying stimulus, noise produces progressively diminishing effects with continued application; hence discontinuous noise is more disturbing than continuous. Noisy conditions may even become a kind of natural background to work, and a change from noise to silence may disturb performance more than minor changes in the noisy background. Further studies[2] have recently been conducted in weaving sheds where the continuous roar and clatter of power-driven looms constitutes a very definite excess of unwanted sound, amounting to 96 decibels which is a sound intensity entitling it to the term "blare"—corresponding to the term "glare" used in connexion with excessively bright lights. So great is the racket that weavers practise lip-reading in order "to hear themselves speak." Moderate traffic noise, for comparison, has a sound intensity of about 60 decibels, ordinary conversation of about 50. The noise was somewhat deadened experimentally by the use of ear defenders, or plugs placed in the ears, which lessened the sound intensity by 15 decibels—about half the apparent loudness. The new study was spread over a period of 12 months during which accurate records of output were carefully compiled. It strengthens the conclusion previously advanced that excessive noise is by no means a negligible factor in determining industrial efficiency; the performance of normal daily work is definitely handicapped thereby. While weavers may become so accustomed or acclimatised to noise that consciousness of its subjective effects—irritation, annoyance, distraction—ceases or becomes much less acute, yet their personal efficiency was found to be increased by about 7½ per cent. when the noise was subdued by wearing ear defenders. This is an effect of considerable magnitude; moreover, it is not a temporary one, occurring only in the initial stages of exposure to noise; it occurs in individuals who for years have been accustomed to excessive noise at their work. Complete immunity cannot be acquired, unless it be by the development of partial deafness—a cure more troublesome than the trouble. This study proves that it is worth while in the interests of comfort and of production to reduce noise in industry by every possible means, whether by quietening machinery or by palliatives such as ear defenders.

WILHELM KOLLE

THE death on Sunday last of Prof. Wilhelm Kolle, director of the Institute for Experimental Therapy in Frankfurt, removes Germany's outstanding bacteriologist. Kolle was born in the Harz, qualified in 1892, and then for four years assisted Robert Koch at the Institute for Infectious Diseases in Berlin. As an outcome of his position there he was asked by the Cape Government to conduct a scientific expedition in South Africa and by the Egyptian Government to do the same in the Sudan, where he founded a laboratory in Khartum. Thus early he gained the world-wide knowledge of the problems of infectious disease which enabled him to collaborate with Wassermann in the classical Handbook of Pathogenic Micro-organisms which now runs to ten volumes. On leprosy, rinderpest, cholera, and plague Kolle made important individual contributions; he was the first to prepare an effective antiserum to an ultramicroscopic virus (rinderpest), and the simultaneous method of immunisation was due to himself and the late Sir George Turner, formerly M.O.H. for the Transvaal. It was Kolle also who in association with R. Otto evolved the method of immunisation against plague with attenuated cultures, and who with R. Pfeiffer worked out protection against cholera with dead cultures. As Ehrlich's successor at Frankfurt he became director of the Georg Speyerhaus research establishment, and it was he who first produced neosalvarsan. He also worked at a forerunner of stovarsol which Ehrlich had described as "spirocid" and discarded on account of its toxicity. More recent books in which Kolle participated are evidences of his ever restless literary

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[1] Two Studies in the Psychological Effects of Noise. Industrial Health Research Board. Report No. 65. H.M. Stationery Office. 1932.

[2] The Performance of Weavers under Varying Conditions of Noise. Ibid. Report No. 70. 1935.

activity: a handbook of Salvarsan Therapy, a textbook of Clinical Methods of Investigation, and one on Experimental Bacteriology. For a short time he occupied the chair of bacteriology at Berne, but he was not at home outside his Fatherland, and the rest of his life was spent in German University towns.

A CENTURY OF MEDICINE IN BENGAL

We published last week an account by a correspondent of the centenary of Bengal Medical College. In the early days of the British occupation of India the practice of medicine was speculative and empirical, the excellent Arabic and Hindu systems, which had been employed for hundreds of years, having fallen from their high estate. Native medical men were bound by tradition, and the only dissection possible was that performed on animals and at post-mortem examinations. A new era dawned when a government order abolished the Native Medical Institution and, in February, 1835, founded a new college in the converted petty-court jail, to which Assistant-Surgeon M. J. Bramley was appointed superintendent. The breaking of the racial prejudice against dissection was due to Pundit Gupta who, with four courageous pupils, went secretly to an outhouse and with his own hands dissected a body under the direction of Dr. Goodeve, assistant to Dr. Bramley. The first college examination was held, after 3½ years of study, in October, 1838, the curriculum embracing eight medical and allied subjects; midwifery was excepted, for the teaching of which there was no provision. In 1845 the college was recognised as a teaching centre by the Royal College of Surgeons of England, and in the same year Dr. Goodeve sailed with four Indian students destined for higher studies in England, where they proved highly successful. The foundation-stone of the medical college hospital was laid by the Earl of Dalhousie in 1848, the Government making a grant of £50,000 from the lottery fund, a means of raising money which had been suppressed by English public opinion some years before. Marble tablets on the walls of the staircase set out both the Vedic and Hippocratic oaths. Familiar names stand out in this history. Esdaile began to operate in 1845 upon patients under the influence of mesmerism, and published a book in the following year giving his experience of 261 operations. Partridge introduced the bloodless method for scrotal elephantiasis, while O'Brien opened the sac in treating hernia and began the excision method for hydrocele. McLeod journeyed to Edinburgh to see Lister's work, and on his return to India did 13 amputations without a death. The emergencies of the Mutiny led to the employment of female nurses who wore no uniform but carried a fan as a badge of office. There are many other interesting recollections in the centenary volume.

CONGENITAL WORD-BLINDNESS AND READING DISABILITY

Children who find difficulty in learning to read are often brought to child guidance clinics for analysis and treatment and it becomes a matter of importance to discover the physical and psychological factors in the case. S. T. Orton, whose writings on this subject are well known, groups together cases in which others have found differentiating features. An article by Miss K. Duguid in *Guy's Hospital Reports* for January is of value in emphasising these differentiating features and supplying a basis for diagnosis and treatment. Miss Duguid, who is psychometric assistant at the hospital, distinguishes three definite types of reading disability. First congenital word-blindness, as described by Hinshelwood, characterised by the gravity of the symptoms and the inability to interpret words although perception may be perfect. Secondly, visual imperception or malperception, in which there is confusion of letters of similar form and even reversals of small words—e.g., "was" for "saw." Thirdly, the condition of left-eyedness and ocular dominance, on which Orton lays so much emphasis, with a tendency to mirror writing and to reading from right to left. The first group can usually be clearly diagnosed, but the second and third have some features in common. Miss Duguid differentiates a fourth group of reading disability, less specific in type, due probably to a combination of causes, including subnormal intelligence, poor auditory perception, and emotional disturbances. Classification so stated appears simple, but a careful reading of the illustrative cases quoted by Miss Duguid and described in considerable detail demonstrates the extreme complexity presented by diagnosis and the possibility of many factors being responsible for the symptoms of a particular case. That heredity was playing a part is clear in some of the cases, but on the whole environmental factors predominate. The article illustrates the value of one kind of investigation now being carried out by child guidance clinics on behaviour problems. Treatment, Miss Duguid points out, has to vary "in accordance with the particular difficulties, interests, and capacities of the individual"; no one method can be applied all round. It is only by more and more individual study of these children that a clearer understanding of their difficulties can be reached.

A MEDICAL HISTORIAN

The recent death of the distinguished medical historian Fielding Hudson Garrison reminds us that he, perhaps more than any one man, contributed to the rising of a valuable school of medical biography in the United States, the example there set having been followed in all lands. Garrison, who was 64 years of age at the time of his death, interpreted the responsibility of a medical historian in a large way, sometimes by writing individual memoirs, and at others by furnishing accounts of medical progress along different lines, illustrating the narratives by references to particular protagonists. He was thoroughly equipped for the task, as for 33 years, 1899–1922, he was assistant librarian at the Army Medical Library in Washington. During a large part of that period he was co-editor of the Index Medicus, published from the Surgeon General's Library, and editor of the Index from 1912 to 1927, when the publication was affiliated with the Quarterly Cumulative Index of the American Medical Association. Among his best known literary productions is his "Outline of Medical History," which appeared first in 1913, went through more than one edition, and was brought to the notice of the English public by his friend Clifford Allbutt, who always had a high admiration for Garrison's talent. Among the biographies from Garrison's pen may be mentioned in particular a memoir of J. S. Billings, while his more general reviews of the march of medicine include "A History of Endocrine Doctrine" which appeared in 1921, "A History of Pædiatrics" which appeared in the following year, and finally "A History of Military Medicine"; here active service had given him personal knowledge, for he had served in the Philippines with the American Army, and in various training camps in the United States during the late war. Garrison's editing of the Index Medicus proved him to be a prodigious as well as methodical worker, but he found time apart from his official labours to be deeply interested in the arts, and was especially a lover of music. He is a great loss to medical literature.

RUPTURE OF THE RENAL PELVIS

Dr. Benjamin S. Abeshouse has found [1] records of 64 cases of rupture of the pelvis of the kidney and adds 3 from his own clinic. In reviewing the findings, he begins by dividing rupture of the kidney into traumatic and spontaneous. The first may occur either with a congenitally normal kidney or with one severely damaged by inflammation or obstruction. It is usually the result of direct or indirect trauma exerted against the kidney in such a way that the pelvis is jammed against the lower ribs or the transverse processes of the upper lumbar vertebræ. When this happens, the tear is usually linear and radial. Spontaneous rupture, on the other hand, never takes place unless the kidney is already the seat of a chronic pyelonephritic or hydronephrotic process. Rupture here is due to a sudden or gradual alteration in the intrapelvic pressure caused by the addition of an obstructive lesion in the upper or lower urinary tract. Rupture of a pathologically weakened pelvis has also been known to follow instrumentation—e.g., retrograde pyelography. Traumatic rupture is commoner than spontaneous, and as would be expected is seen more frequently in males than females. It is to be suspected if, in a patient with an antecedent history of chronic pyelonephritis or hydronephrosis, there is a sudden sharp pain in the renal region followed by swelling, rigors, pyrexia, vomiting, and (often) collapse. A clinical impression of rupture should always be confirmed by pyelography by the gravity method. Operative treatment may be conservative or radical, but nephrectomy is unjustifiable until the condition of the other kidney has been ascertained. In a patient with much toxæmia or debility the operation should be carried out in two stages, preliminary drainage being followed by nephrectomy or conservative repair at a later date.

ACUTE OPHTHALMIA IN EGYPT

In the eighth annual report [2] of the Giza Memorial Ophthalmic Laboratory, the director, Dr. Rowland P. Wilson, has some interesting remarks to make about the seasonal ophthalmias in Egypt. It appears that the two common forms of acute ophthalmia—namely, Koch-Weeks conjunctivitis and gonococcal conjunctivitis, which he finds from smears to be of about equal frequency—differ materially in the time of their appearance. The former occurs in epidemic form chiefly in the spring, the latter in the autumn, as is well brought out in the graphs which accompany the report. It is easy to explain the coincidence of the Koch-Weeks infection with the onset of the warmer days in the spring, but why is not the increase continuous through the still hotter days of summer? Dr. Wilson finds three grounds for this: (1) excessive heat inhibits the growth of the Koch-Weeks bacillus; (2) its virulence falls after it has reached epidemic character in May and June; (3) the drop in July and August is associated with the decrease in the number of flies. The primary and secondary seasonal maxima of cases coincide with the two definite fly-breeding seasons of the year. The incidence curve of gonococcal conjunctivitis on the other hand depends on two purely climatic factors, temperature and atmospheric humidity. The gonococcus is peculiarly susceptible to desiccation and survives in discharges only so long as these remain moist. In pus it dies as soon as the pus dries. The Koch-Weeks bacillus may be still alive two and a half hours after drying in the open and can withstand drying at room temperatures for at least 18 hours. This explains why gonococcal conjunctivitis is comparatively rare during the dry hot spring, but begins at once to increase when the atmosphere becomes moister. No doubt methods of transmission also play their part in the difference. Direct Koch-Weeks infection by flies has not yet, it seems, been subjected to direct proof, but is now being investigated in the Giza laboratory. Dust is another fruitful source of chronic conjunctivitis and may have some effect in increasing acute cases of the Koch-Weeks variety. The dry desert winds of March and April, while favouring the spread of this form, would inhibit the spread of the gonococcal variety. In Egypt the coincidence of gonococcal urethritis and conjunctival infection is held to be unusual. Urethritis shows no sign of seasonal variation in the figures collected from all the Government venereal centres in Cairo. But does this in itself prove that the two are not related? Ophthalmia neonatorum, as we know it, is uncommon in Egypt.

CHARLES BELL, DISCOVERER

There are men of science along all lines whose original work proves so fundamentally valuable that reference must always be made to it as developments occur, and in this way their personalities, as discoverers, remain ever interesting. Charles Bell laid the foundations of our physiological knowledge of the nervous system, and in the current number of the *Edinburgh Medical Journal* Prof. Edwin Bramwell gives an interesting résumé of his life and work, the occasion being the delivery of the Harveian oration last year before the Royal College of Physicians of Edinburgh. Sir Charles Bell did for the nervous system, Prof. Bramwell claims, what Harvey did for the circulation, Harvey's work, however, being more or less finite, while Bell's opened up a new vista for his successors. Bell left Edinburgh for personal and family reasons when his work was only beginning, and came to London. He had made a mark by collaboration with his brother, John Bell the surgeon, in a system of anatomy, and had there and elsewhere displayed his fine artistic capacity. He had no regular appointment in London and for a time met with no success as a lecturer. But his sterling qualities attracted the attention of those immensely influential seniors Abernethy and Astley Cooper, and the publication of the "Anatomy of Expression" brought him immediate fame. Later he was enabled to purchase the great Windmill-street school, and was appointed surgeon to the Middlesex Hospital. There followed his discoveries in relation to the anatomy of the nervous system culminating in the publication of papers, previously communicated to the Royal Society as a volume, entitled the "Nervous System of the Human Body." This was the first exposition of the function of the nerves. In 1836, being 62 years of age, he accepted an invitation to fill the chair of surgery in Edinburgh, a position which he held until his death from angina pectoris in 1842. Prof. Bramwell's sketch shows Sir Charles Bell to have been an outstanding figure as a physiologist, pathologist, and surgeon, while his accomplishment as artist was of the greatest value to him. Prof. Bramwell shows that Bell's researches were leading him up to the dictum enunciated by Hughlings Jackson many years later that movements not muscles are represented in the cortex. And Prof. Bramwell concludes: "Bell provided a conception of the functioning of the nervous system based upon his anatomical, experimental, and clinical observations which has been proved, by those who have followed him, to be substantially correct. He conceived what may well be described as the circulation of nervous impulses, a discovery of the first magnitude, as was Harvey's discovery of the circulation of the blood." We can never be reminded too often of the debt which medicine owes to such discoverers.

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[1] Surg., Gyn., and Obst., March, 1935, p. 710.

[2] Cairo: Schindler's Press. 1934. P.T.25

IS CODEINE A DANGEROUS DRUG?

ATTENTION has recently been directed in Canada to the considerable increase in the imports of codeine into that Dominion, and the question has been reopened whether codeine (methyl-morphine) should not be regarded as a "dangerous drug," and be subjected to the same or similar restrictions to those applicable to morphine, heroin, and cocaine. In the *Canadian Medical Association Journal* for April figures are quoted to show that, whereas in 1927 9330 oz. of codeine were imported, in 1934 no less than 46,190 oz. entered the Dominion; and further that while the per-capita consumption of codeine in Great Britain is 11 kilos per million inhabitants, in Canada it is 109 kilos. Moreover, the Department of Narcotics in Ottawa have found reason for thinking that codeine is to some extent replacing morphine among drug-addicts, more especially among the under-world in Canadian cities; it is significant that while in recent years the importations of morphine have fallen considerably those of codeine have increased. The question whether codeine should or should not be regarded and scheduled as a dangerous drug of addiction is not a new one. Indeed, at the first Hague Opium Conference in 1911–12 the question was keenly discussed and in the first draft of the Hague International Opium Convention codeine was in fact included. Its inclusion was strongly resisted by the German delegates who challenged the conference to cite any case of codeine addiction. One of the British delegates (Sir William Collins) promptly cited a case from the *Klinische Wochenschrift* of "Codeinismus," in which the victim had been reported to be taking 70 to 100 codeine pills a day, and referred to the works of Cushing and Sainsbury in support of the opinion that codeine should be regarded as a habit-forming drug. Eventually codeine was struck out of the Convention to secure unanimity, but, as was remarked by the British delegate, "it must not be held that this is done because codeinism and codeine mania are unknown to medical literature." At the present time, under an order in council and by special regulations which came into force on Jan. 1st, 1934, codeine and its salts become drugs under Part III. of the Dangerous Drugs Acts for certain purposes, but are not subject to the regulations which apply to other drugs named in Part III. We understand that the Narcotics Division at Ottawa have placed the information collected in Canada before the Opium Advisory Committee of the League of Nations and that the Health Committee of the League has been requested to report as to whether codeine should or should not be dealt with like other dangerous drugs of addiction.

LATE RESULTS OF CHRONIC APPENDIX OPERATIONS

THE excellent new vogue of following up patients discharged from hospital many years before has recently led Dr. E. Poppe[1] to analyse the 703 patients whose appendices were removed for chronic diseas in a Norwegian public hospital in the five-year period 1928–1932. They had complained of pain in th right iliac fossa, lasting for a couple of minutes t a couple of hours, and often radiating to the righ thigh. Many of them had been dyspeptic and constipated. In spite of a careful clinical examinatio little had been found apart from tenderness in th right iliac fossa. A noteworthy fact was the minority in which the males found themselves among th 703 patients; only 241 (34·3 per cent.) of them wer males. Dr. Poppe has found a similar numerica feminine predominance in the statistics of sever other large public hospitals in Norway. In his own material the age at which his female patients wer most subject to primary chronic appendicitis was between 15 and 30—an age-incidence certainly not explained by Aschoff's pathological-anatomical studies which have shown that post mortem the incidence of diseased appendices rises steadily with age both in women and in men. Another curious fact, to which Dr. Poppe draws attention, is that in his hospital acute, as distinct from chronic, appendicitis is just as common in men as in women. The appendicectomy proved fatal in three cases. A set of questions was addressed to the survivors, and those who reported themselves perfectly fit were not re-examined. As many as 646 were, however, re-examined. In 432 of these cases (66·9 per cent.) the results after the appendicectomy were good. When the patients were classified according to sex, it was found that such good results had been achieved by 84·1 per cent. of the male cases, but only by 58 per cent. of the female cases. This comparatively low percentage for women was reduced still further to 50 per cent. in the case of the women aged about 25 years. A classification, according to sex, of the ailments from which 33 men and 176 women still suffered showed that the numerically most important were constipation, dyspepsia, and nervousness combined. Nine men and 91 women came under this heading. There were as many as 41 women in whom pain in the right abdomen was the only persistent symptom. As a result of this investigation Dr. Poppe has a practical suggestion to make. The number of appendicectomies for so-called chronic appendicitis in women could be reduced if the constipation from which they suffered were properly treated; and the results of the operation when carried out could be improved if attention was paid to constipation in the after-treatment.

THE King has nominated Dr. John Ritchie, medical officer of health for Dumfries, as a member of the General Medical Council. Dr. Ritchie takes the place of the late Sir Leslie Mackenzie as Crown nominee for Scotland.

DR. A. G. W. Thomson has been appointed a commissioner of the General Board of Control for Scotland in succession to the late Dr. J. P. Sturrock.

THE next session of the General Medical Council will open at 2 P.M. on Tuesday, May 28th, under the presidency of Sir Norman Walker.

THE Cambridge University Press will publish shortly an annotated list of medical practitioners in the diocese of London, 1529–1725, licensed under the Act of Parliament 3 Henry VIII., cap. 11. The object of this short book is to show in what manner the Bishops of London handled their great and serious responsibility respecting the licensing of medical practitioners.

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[1] Norsk. mag. f. laegevidensk., April, 1935, p. 395.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LII.—PROGNOSIS OF BRONCHIECTASIS IN CHILDREN

UNTIL the introduction of lipiodol in radiography of the chest by Sicard and Forestier (1922), opinions on the prognosis in bronchiectasis in children were for the most part pessimistic. This is readily understood on reviewing the criteria formerly required for a diagnosis of bronchiectasis on physical signs alone—dullness at the base with bronchial breath-sounds and moist crepitations, chronic cough, worse in the morning with copious muco-purulent sputum, clubbing of the fingers, and cyanosis. Such a picture is uncommon in childhood; it represents merely an advanced state of pulmonary crippling, and the expectation of life of those manifesting such changes could only be unfavourable. From the evidence provided by lipiodol investigations, we now know that bronchiectasis may be present and give rise to very few symptoms, and also that it is a much more common condition in children than was formerly supposed. Bronchial dilatation, in fact, cannot be diagnosed in its early stages without the aid of lipiodol. The prognosis therefore has required revision and tends to be more hopeful, but is still in a stage of determination.

CLINICAL ASPECT OF ACQUIRED BRONCHIECTASIS

The type of case in which bronchial dilatation may be suspected presents clinically the physical signs of pulmonary fibrosis, but these are often so inconspicuous that an examination depending on auscultation and percussion gives little information on the condition of the lung. Of greater significance is the fact that there is almost always a past history of pneumonia (broncho-pneumonia), often associated with measles, whooping-cough, or influenza. The child is brought to the doctor because of a persistent cough in the daytime, which gets worse in winter. The cough is not spasmodic, and is usually unproductive. Sputum, when present, consists of thick tenacious mucus, and only in advanced cases is it purulent and evil-smelling from additional infection with putrefactive organisms. Vomiting provoked by the cough is a suggestive symptom, and in a few cases hæmoptysis has been recorded. The child is often several pounds below the proper weight for its age. Dyspnœa on exertion, cyanosis, and clubbing of the fingers are signs of severe pulmonary involvement in chronic cases.

Physical signs to some degree are usually found to be present when the chest is examined, though they may be slight. They include dullness on percussion at one or both bases, possibly with displacement of the heart towards the most affected side, weak breath sounds but seldom bronchial breathing, and in some cases moist râles. A diminished expansion of the lower part of the chest on the affected side may also be observed.

RADIOGRAPHY AND LIPIODOL

By X rays alone one of two conditions may be revealed: (1) The common form is fibrosis denoted by excessive root shadows and heavy streaky shadows running from the hilum towards the diaphragm. During inspiration the diaphragm on the affected side often does not descend so fully as on the opposite side. (2) Collapse of a lower lobe. In this type of case there is a triangular shadow at one or other base, the spine and diaphragm forming two borders of the triangle, and the visible border or hypotenuse reaching from the hilum to some point along the phrenic surface. With lipiodol injection the presence of bronchiectasis is confirmed or disproved. In either of the two conditions, interstitial pneumonia or lobar collapse, bronchial dilatation is liable to occur. The mechanism of its production is thought to depend chiefly upon inspiratory effort, especially that which follows the act of coughing. With expansion of the chest wall a negative intrathoracic pressure occurs, causing air to enter the alveoli. If this is prevented locally by the accumulation of thick tenacious mucus, the obstructed bronchioles tend to dilate. Other explanations of dilatation are that it is the effect of fibrous traction, which can rarely be proved, or of accumulation of septic sputum in weakened bronchi, which only occurs in the "wet" type of bronchiectasis. The dilatation may be saccular or cylindrical, the latter form being common when there is collapse of a lobe. In this atelectatic type of bronchiectasis the triangular shadow on the spino-phrenic angle represents collapse of the whole of a lower lobe. With lipiodol the outline of a main bronchus can be seen entering the triangular area.

There are three methods of injecting lipiodol (10 to 15 c.cm.): (*a*) the intratracheal route, by direct introduction through a catheter; (*b*) the cricothyroid route, by means of a cannula; and (*c*) through a nasal catheter reaching the trachea. The best and safest method for children is (*a*) the intratracheal route, though this necessitates general anæsthesia by ether, which requires to be fairly deep. Points against (*b*) and (*c*) are, that in (*b*) surgical emphysema of the mediastinum has been known to occur and to prove fatal, and in (*c*) there is uncertainty whether the lipiodol will enter the trachea in sufficient quantity; moreover, to suppress the cough reflex spraying with cocaine will probably be required, and this is a dangerous procedure in children. In (*a*) the amount of discomfort and coughing involved by the injection of the lipiodol is usually slight. The method demands a high degree of technical skill.

The injection of lipiodol is not advocated for every patient presenting signs of pulmonary fibrosis in which bronchial dilatation is suspected, but the accurate information obtained justifies its use in cases requiring prolonged treatment, and especially when it is desired to ascertain the state of the bronchioles in a collapsed lobe.

THE OUTLOOK

The outlook depends upon whether the bronchiectasis remains "dry" with little or no sputum, or becomes "wet" with purulent sputum. Age has some influence. Cases commencing in infancy have a high mortality with a short period of survival. In those with onset at a later period bronchiectasis may be present for many years, even into late adult life without the incidence of sepsis. Cases of recovery have been described, where on subsequent lipiodol examination all traces of bronchial dilatation have disappeared. This result, however, is rare in the atelectatic type of bronchiectasis, in which the collapse is usually permanent. As Anspach has indicated, the smaller and denser the triangular shadow remains, from absence of re-expansion, the worse the prognosis. An unfavourable sign in bronchiectasis is the recurrence of febrile attacks with increase of cough and of physical signs in the chest, signifying renewal of pulmonary inflammation. Infections of the upper respiratory passages, throat, antra, ears, are often mentioned as predisposing to advance of the bronchiectatic process, but in some cases they are probably secondary not primary, arising from infection ascending from the lung.

In children with bronchiectasis open-air treatment, including open-air schools, is of great benefit. For the atelectatic type efforts should be made to re-expand the collapsed portion of lung by breathi exercises and CO_2 inhalations. When the collapse permanent, lobectomy may in the future become t best means of treatment. As the child gets old choice of occupation, avoiding dust-laden, close, over-heated atmospheres, is a matter of consideral importance.

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SPECIAL ARTICLES

THE TREATMENT OF EARLY SYPHILIS

A REPORT OF AN EXPERT COMMITTEE OF THE LEAGUE OF NATIONS

THE Health Organisation of the League of Nations publishes[1] the results of an inquiry into syphilis treatment carried out in five countries (Denmark, France, Germany, Great Britain, United States of America); 93 clinics in these countries have contributed to the inquiry and 13,198 case-records of primary and secondary syphilis have been analysed.

Guided by the principles revealed by the study of these records, the experts who have collaborated[2] have adopted the following recommendations which are of great interest to syphilologists, public health officers, and private practitioners:—

1. Treatment should be recommended as early as possible in the sero-negative primary stage. In this connexion, the fullest possible use should be made, for purposes of diagnosis, of the microscopical examination of secretion from primary lesions, or from lymph glands.

2. It should be emphasised that, prior to the institution of either of the systems of treatment outlined below, there should be an adequate physical examination to determine the absence or otherwise of any indication for caution in respect of the dosage.

3. *It is essential that, in carrying out the treatment, a strict supervision of the patient be exercised, especially in respect of mucous membranes, skin, kidneys, and liver.*

4. Observation, clinical and serological, after completion of treatment should be adequate and in any case for not less than three years.

5. Adequate examination of the spinal fluid, at least before dismissal from observation, is essential.

6. The principles to be followed in carrying out the actual treatment should be as follows:—

(*a*) To employ a comparatively heavy individual dosage of the arsenobenzene and of the bismuth or mercurial compounds, the doses being administered in comparatively rapid succession, especially at the commencement.

(*b*) To maintain a persistent attack on the disease, avoiding intervals of such length as to afford the parasi an opportunity of recovering.

(*c*) To administer approximately as much treatment primary as to secondary cases.

7. The material studied does not enable a cle decision to be made as to the relative merits of inte mittent treatment, with courses of injections i rapid succession separated by rest intervals of som weeks, and continuous treatment, or between th simultaneous employment of both arsenical an bismuth or mercury and the system in which bismut and mercury are withheld until a number of arsenic injections have been administered.

Nevertheless it seems practicable from the resul of the analysis and from the personal experience of th experts to formulate a system of intermittent treat ment and *one of continuous treatment either of whic* can be expected to yield satisfactory results i ordinary cases of early syphilis.

It seems possible that the intermittent treatmen which is suggested below may in effect be continuous or *practically continuous, treatment owing to th* continued absorption of bismuth from the sites of th injection for some weeks *after any* temporar suspension of the treatment.

Plan of Intermittent Treatment

1. *Males.*—For adult males of average weigh aged less than 50 years and in whom there is no contra indication, a number of courses of injections on th plan described below (Table I.). It should be sai that, at the beginning of this course, some administe at once the full weekly dose (0·60 to 0·75 gramme) while *others divide it into two doses* (e.g., 0·30 an *0·45 g.) so far as the first week is concerned.*

TABLE I.—*Weekly Dosage*

Weeks.	"914" (gramme).	"606" (gramme).	Insoluble compound of bismuth containing bi-metal *; (gramme).
1st to 8th	0·60 to 0·75 or	0·4 to 0·5 and	0·20 to 0·24
9th	—	—	0·20 to 0·24
10th	—	—	0·20 to 0·24

* 1. By *insoluble* bismuth is here meant compounds of a ver slight solubility in water. They should therefore be given i suspension, those of extremely slight solubility (the oxychloride &c.) usually in a watery suspension, those that are more solubl (the subsalicylate, the iodo-bismuthate of quinine, the alkalin tartrates, &c.) suspended in a vegetable oil. If a *liposolubl* compound (e.g., t [illegible] &c.) is preferred, it i desirable that the [illegible] weekly in half doses *The dosage of* [illegible] should be calculated according to their content in bismuth metal.

[illegible] to bismuth, a course of mercury may be [illegible] rm of inunctions (40 days at 3 g. o [illegible] or of injections (70 mg. calomel o 120 mg. salicylate of mercury, &c., suspended in a suitabl base).

It is recommended that: (*a*) In cases which remain

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[1] Quarterly Bulletin of the Health Organisation, vol. iv., No. 1, March, 1935.

[2] Prof. J. JADASSOHN, former director of the Dermatological Clinic of the University of Breslau; Colonel L. W. HARRISON, Technical Adviser in Venereal Diseases, Ministry of Health, London; Prof. TH. MADSEN, Director of the State Serotherapeutic Institute, Copenhagen; Prof. LOUIS QUEYRAT, President of the Ligue nationale française contre le péril vénérien; Prof. Queyrat died and was succeeded by Prof. H. GOUGEROT, Director of the Clinique des maladies cutanées et syphilitiques de la Faculté de Médecine de Paris (Hôpital St. Louis); Prof. C. RASCH, Director of the State Hospital, Copenhagen, whose place [illegible] Dr. SVEND LOMHOLT, Director of the [illegible] nsens Lysinstitut, Copenhagen; Dr. J [illegible] Dermatology and Syphilology, Schoo [illegible] of Pennsylvania, Philadelphia. Rapp [illegible] MARTENSTEIN, Director of the [illegible] Municipal Hospital, Dresden-Friedrichstadt.

TABLE II.—PLAN OF ALTERNATING CONTINUOUS TREATMENT FOR EARLY SYPHILIS

—	"606" (gramme).	Interim treatment.	Serol. test.	Remarks.
Day. 1	0·3–0·6	....	1	"606" dosage for first 3 injections at level of 0·1 gramme for each 25 pounds (11·3 kg.) body-weight. Average subsequent dosage, 0·4 gramme, men; [illegible] gramme, women, the fourth and subsequent injections in the first course at weekly intervals. In average patient, all lesions heal rapidly and blood serological reaction becomes negative during first course. If "606" cannot be used, substitute 8 to 10 doses 0·2 gramme silver arsphenamine, silver salvarsan, silver arsenobenzol, &c., or 10–12 doses "914," [illegible] maximum for women and [illegible] gramme for men... The [illegible] subsequent courses.
5	0·3–0·6			
10	0·3–0·6			
Week. 3	0·4			
4	0·4			
5	0·4			
6	0·4			
7	0·4	....	1	If mercury is used; note overlap of 1 week at end of first and start of second "606" courses. At this point a few days without treatment may be [illegible]. Neuro-relapse.
8	....	Bismuth, 4 doses, 0·2 gramme and K.I., or Ungt. Hg. and K.I.		
9				
10				
11				
12	0·4	....	1	"606" starts, bismuth stops. Watch for [illegible] reaction after first dose of "606." Try to prevent short lapses of treatment, especially at this early stage.
13	0·4	....	1	
14	0·4	....	....	
15	0·4			
16	0·4			
17	0·4	....	1	
18–23	....	Bismuth, 6 doses, or Ungt. Hg. and K.I.	....	Bismuth is better than mercury. Use if possible. Examine cerebro-spinal fluid if patient's cooperation can be secured at about this time. If found to be abnormal, continue or intensify treatment as required, re-examining fluid within six months.
24	0·4			
25	0·4			
26	0·4			
27	0·4			
28	0·4			
29	0·4			
30–37	....	Bismuth, 8 doses or Ungt. Hg. and K.I.	....	
38	0·4	....	1	
39	0·4			
40	0·4			
41	0·4			
42	0·4			
43	0·4	....	1	
44–53	....	Bismuth, 10 doses or Ungt. Hg. and K.I.	....	Note that bismuth or mercury courses are gradually getting longer—[illegible] and now 10 weeks.
54	0·4	....	1	
55	0·4	....	....	The average sero-negative, sero-positive primary or early secondary patient should have at least 5 courses of "606."
56	0·4			
57	0·4			
58	0·4			
59	0·4	....	1	
60–69	....	Bismuth, 10 doses or Ungt. Hg. and K.I.	....	It is safer to finish treatment with bismuth or mercury rather than with [illegible]
70–122	Probation.	No treatment.	6–12	
123	Complete physical and neurological examination, lumbar puncture, and, if possible, fluoroscopic examination of heart and great vessels.			

or become serologically negative during, or by the end of, the first course four such courses be administered, with intervals of three to five weeks between any two courses.

(*b*) In cases which have not become sero-negative by the end of the first course, in addition to the amount of treatment shown in (*a*), further courses should be administered until the patient has received as a minimum three beyond that which has ended with negative serum reactions. At the option of the individual clinician, this treatment may be prolonged as may be considered necessary.

(*c*) Cases presenting signs of clinical relapse of an early type should be dealt with on principles similar to those enunciated in (*b*).

2. *Females.*—For females (non-pregnant), treatment should be administered on the plan outlined for men with the exception that the single dose of "914" should be reduced by 0·15 g. and that of "606" by 0·1 g.

In the event of any reduction in the amount of treatment being indicated it is recommended that this be effected by reducing the number of arsenical injections rather than by reducing the individual dose or increasing the intervals.

Plan of Continuous Treatment

The plan of continuous treatment is as shown in Table II. and the succeeding paragraphs.

As an optional scheme more in harmony with the trend toward longer courses, three series of ten to twelve injections each of the arsenical drug may be given. To secure an overlapping of the heavy metal and the arsenical, believed by some observers to protect against neuro-relapse, begin the bismuth two, three or even four injections before the end of the longer arsenical course, continue it through the period in which the arsenical is suspended, and on into the beginning of the next arsenical course. The bismuth is then suspended while the arsenical course is completed.

The bismuth salt advised for this system is bismuth salicylate in oil suspension, in full adult dosage, with due regard for weight. Other preparations of bismuth may be used only with due regard for their equivalent metallic content and for their rate of elimination. The mercurial inunction is [illegible] metallic mercury in a suitable base [illegible] per inunction, five or six inunctions per week [illegible] use of the iodide is optional, depending on [illegible]

The use of insoluble mercurials [illegible] in this system is not recommended.

It should be further noted [illegible] metal is employed after the [illegible] heavy metal courses are [illegible] intervals of six to eight weeks [illegible] of ten weeks injections, or [illegible] inunctions.

In cases of primary syphilis which have remained sero-negative throughout, a minimum of five courses of "606" or "914" should be given. Cases of sero-positive primary syphilis should receive the full treatment called for by this system.

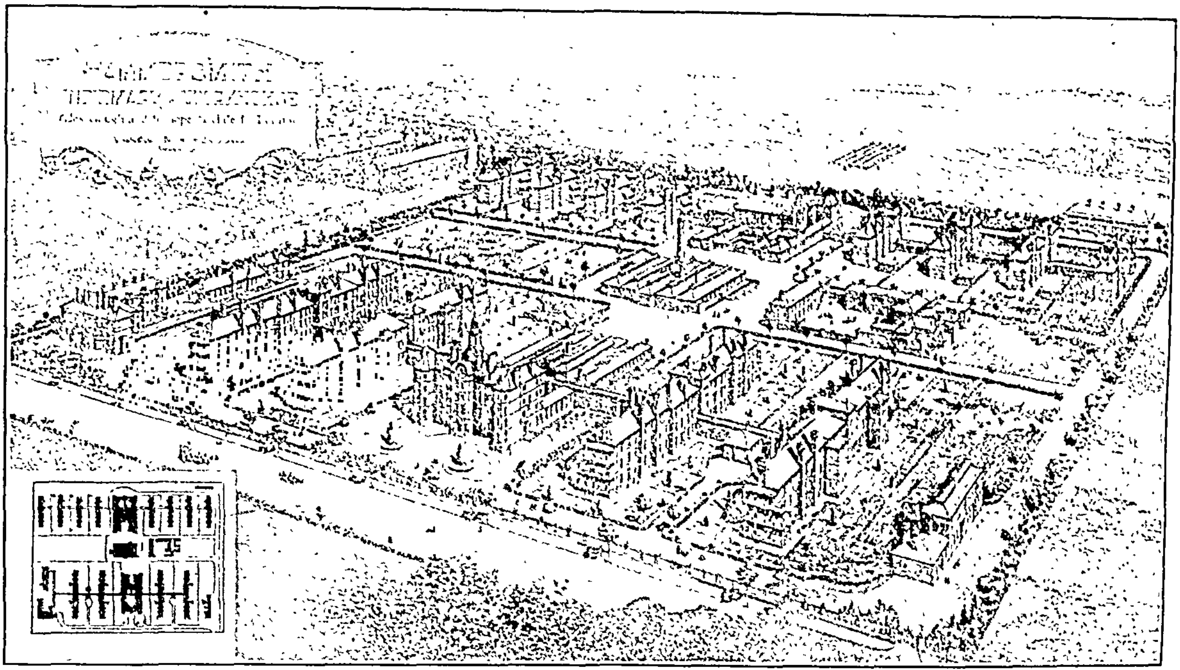

FIG. 1.—A bird's eye view of the Hammersmith Hospital as it was planned in 1905 by the architects, Messrs. Giles, Gough, and Trollope, but not then fully carried out from reasons of economy. The new out-patient department and the medical school building now make up the south-east block and complete the original scheme in this respect. The buildings of the institution to the north still afford great scope for future development.[*]

POST-GRADUATE MEDICAL TEACHING

PROGRAMME OF THE NEW HAMMERSMITH SCHOOL

THERE is something of adventure about the curriculum of the British Postgraduate Medical School opened by the King this week, for the staff has been taken from many parts of the Empire, the chairs of other Universities have been rifled, and the dean has been chosen from among distinguished administrative officers of the Indian Medical Service. The history of the school's development has already been told in these columns, with an account of the buildings themselves. What follows is intended simply to give an indication of the way in which post-graduate teaching is to take its course at present. Staff and equipment are there. Students have only been admitted officially since May 1st. They will be drawn from many sources, and it is hardly likely that the school will attain its greatest usefulness until arrangements are made for resident students. Many of the features suggested are still in the making; the most striking feature of the whole is the small provision made for the lecture type of teaching and the large provision for bringing students into personal contact with cases. In what follows we are much indebted to the dean and the heads of the four departments.

Department of Medicine

This department has charge of 170–180 beds distributed in six large wards. The full-time staff of the department consists of:—

Professor	4 First assistants
Reader	5 House physicians

and one assistant medical officer of the L.C.C. service who acts as resident medical officer. The first assistants are chosen for their expert knowledge of one or other of the various branches of medicine, such as neurology, respiratory and cardiovascular diseases, endocrinology, infections, in order that the specialised knowledge of the staff may cover a wide field. It is obvious that at any one time all the branches of medicine in which special knowledge is required cannot be represented on the staff, and to fill these gaps consultants have been appointed who visit the hospital at stated intervals, and at other times when their services are required. In the future it is hoped that additional departments, such as psychological medicine and diseases in childhood, may be added.

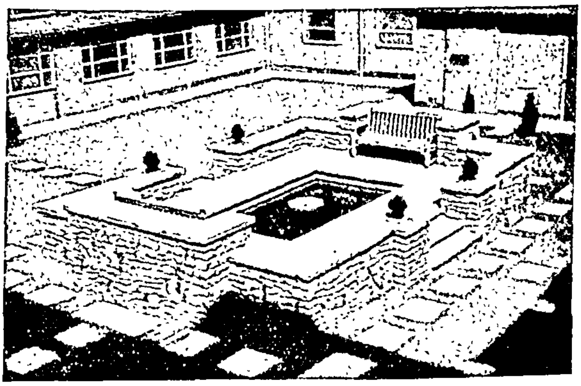

FIG. 2.—The fountain in the court of the school building which will no doubt become an informal consultation centre.

Each senior non-resident member of the staff, with a resident house physician, has charge of 25–30 beds. In addition to this duty each first assistant will give his expert special knowledge for the diagnosis and treatment of cases coming under his specialty throughout the wards of the department.

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[*] With the exception of this photograph which we owe to the courtesy of the architects, all the other pictures in this article were specially taken for the purpose by Mr. C. M. Braithwaite, 103, Victoria-parade, Moseley, Birmingham, from whom prints of any of them can be obtained.

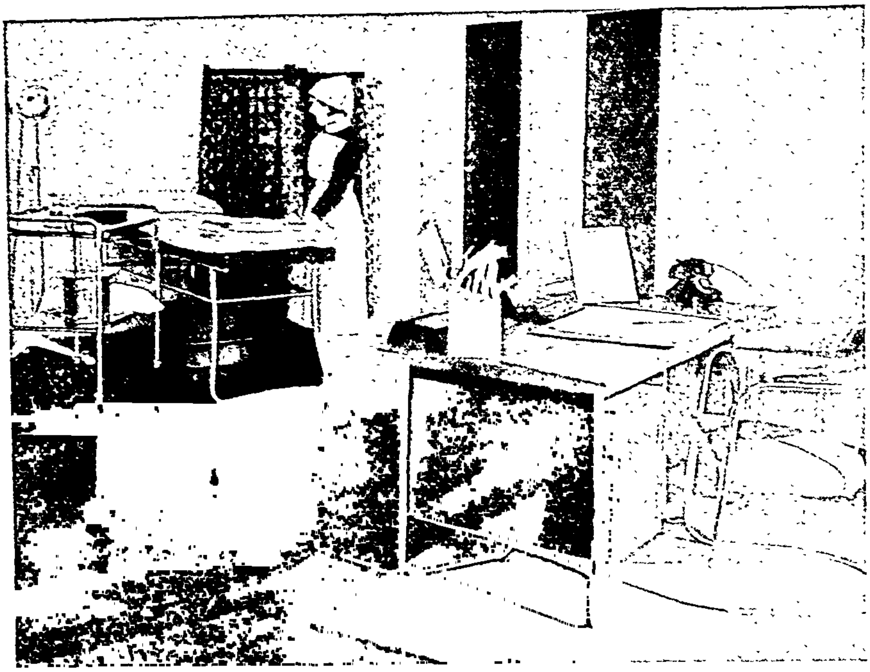

FIG. 4.—Physicians' examining room in the medical out-patient department. There are two large rooms as the one illustrated and two smaller rooms. The larger rooms are suitable for teaching. Entrance to the dressing rooms is seen behind.

In this way he will obtain material for his investigations and research and, at the same time, by means of the beds of which he is in charge and to which cases of all kinds are admitted, he will keep up his knowledge of general medicine. Each senior member of the staff will hold a consultative out-patient session on one morning a week, when he will see cases referred to him from the casualty department and patients discharged from the wards who require further treatment at the hospital or whose progress he desires to follow.

The house physicians and the officer loaned from the London County Council service are resident. The former will be recruited from the graduate students who have attended courses at the school. By allotting a comparatively small number of beds to each house physician opportunities are provided for them to study for higher degrees, prepare theses, attend other general or special hospitals, work in the laboratories, engage in research, and so forth. The house physicians are responsible for carrying out treatment and for the patients' records.

A small laboratory has been provided adjacent to each ward where simple laboratory tests can be carried out. Plans have been prepared for a series of laboratories for the physiological investigation of patients, including galvanometer rooms for work on the cardiovascular system, rooms for testing respiratory functions, basal metabolism, &c., and their construction is to be commenced immediately.

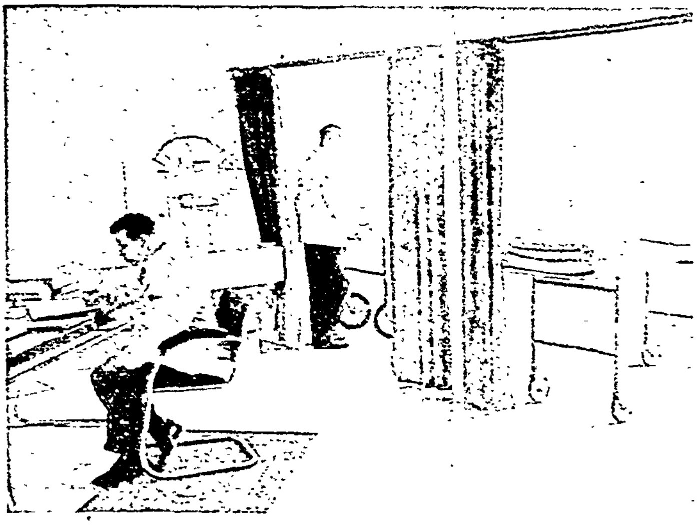

FIG. 3.—Receiving room in the new out-patient department. There are two such rooms, one for female patients and one for male. Patients are seen in these rooms at all times and may be dealt with immediately by the casualty medical officers, referred to the out-patient departments which are consultative, or admitted to the hospital.

COURSES OF INSTRUCTION

I.—Instruction in clinical medicine will be provided by appointments to the wards of graduate students in small numbers (about 15 students to 60 beds) for periods of three or more months. They will be allotted cases to which they will act as clinical clerks, recording fully the histories, physical findings and progress, aiding the house physician in carrying out treatment, and carrying out the simpler laboratory investigations that can be made in the ward laboratories. Bedside clinics or ward rounds will be held on two mornings (11.30 A.M.–1 P.M.) a week with the small group of students working in a ward, and on two mornings a week theatre clinics will be given by the professor or the reader for the whole number working in the department. On a fifth morning there will be a clinical-pathological conference at which all the students will attend, and on one afternoon a demonstration of X rays will be given by the lecturer in radiology. Post-mortem examinations are held daily, and demonstrations are given at 1.30 P.M. On most afternoons the students will be free to study their own cases, attend other general or special hospitals, or work for examinations. A good working library is provided.

II.—On three mornings a week out-patient sessions are held. These are consultative in character, cases being referred to them from the casualty department, and at them cases discharged from the wards and requiring further advice are seen also. Small numbers of students working in the wards assist at these sessions.

III.—Intensive courses for practitioners, lasting two weeks, will be given as frequently as practicable. In these courses a disease or group of diseases would be considered in a wide manner to illustrate the natural history of the process, the clinical manifestations, the physiology, pathology, and treatment. Clinical pathology, laboratory and X ray methods of diagnosis would be demonstrated. Subjects covered might include discussions—e.g., on (1) the place medicine and the doctor are taking in modern

A SPECIMEN WEEK OF INSTRUCTION IN CLINICAL MEDICINE

—	10–11.30.	11.30–1.	1.30–2.	2–3.	3–4.
Monday.. ..	Ward rounds by staff and ward work by students.	Ward clinic by staff to students in small groups.	Post-mortems.	Ward work by staff and by students.	Ward work by staff and by students.
Tuesday ..	Ward rounds by staff and ward work by students. * Prof. Fraser. * Dr. Stuart Harris. } Out-patients.	Theatre clinic. Dr. Aitken.	do.	do.	do.
Wednesday ..	Ward round, staff only. Ward work by students.	(12–1.) Clinico-pathological conference.	do.	do.	do.
Thursday ..	Ward rounds by staff and ward work by students. * Dr. Wood.	Ward clinics by staff to students in small groups. Out-patients.	do.	Radiological conference. Wards closed.	—
Friday	Staff and students in wards.	Theatre clinic. Prof. Fraser.	do.	As on Monday.	
Saturday ..	Students in wards. * Dr. Aitken. * Dr. Jennings. } Out-patients.		—	—	—

* Students will attend out-patient department with the member of the staff to whom they are attached.

society; the doctor's responsibilities to the State and to his individual patient; (2) methods of clinical examination and the importance of history taking; the study of the patient and medical psychology; (3) the physiology of the mind; (4) infections of the upper respiratory passages, acute and chronic; (5) chronic arthritis; (6) dyspepsia. In each case at least one outside member of the profession, expert in some branch of medical practice, would take part. This year it is proposed to hold such courses in June, July, September, and November; the number of practitioners attending will be limited to 25. The work will be as practical as possible and will include medicine, surgery, obstetrics, and pathology.

IV.—It is proposed to arrange a series of lectures and demonstrations on one afternoon or evening a week during the winter at a time suitable for practitioners in London. A series of subjects would be covered.

V.—Members of the medical profession, other than those on the whole-time staff of the school, will be invited to take part as teachers in the refresher courses and at the weekly lectures (III. and IV. as above). In this way the benefit of expert teachers in a large variety of subjects from London and elsewhere will be available for postgraduate instruction.

VI.—It is hoped that special lectures may be arranged to be given by distinguished visitors to London from

A SPECIMEN INTENSIVE COURSE FOR PRACTITIONERS

FIRST WEEK

—	10.30–1.0.	Conducted by—	2.0–4.30.	Conducted by—
Monday ..	Principles of the examination of patients.	Prof. Fraser and the medical staff of the school.	General principles in the treatment of Fractures.	Mr. Lambert Rogers and surgical staff.
Tuesday ..	At the Central London Throat, Nose, and Ear Hospital, Grays Inn-road.		At the London School of Dermatology, St. John's Hospital, Leicester-square.	
Wednesday ..	Natural history, diagnosis and treatment of Peptic Ulcer and various types of Functional Dyspepsias.	Dr. J. A. Ryle and the staff of the school, including the pathological and radiological staff.	Continuation of the same subject.	The same staff.
Thursday ..	Common types of Anæmia: their diagnosis and treatment.	Dr. Janet Vaughan and the staff of the school.	Demonstration of Obstetrical Cases.	Prof. Young and the staff of the school.
Friday	Antenatal Examination.	Prof. Young and staff.	Common Gynæcological Conditions.	Dr. Chassar Moir.
Saturday ..	Psychology in General Practice.	Dr. Edward Mapother.	—	—

SECOND WEEK

Monday ..	Gastric Carcinoma: its diagnosis and treatment.	Prof. Grey Turner and the staff of the school.	Heart Disease and Heart Failure.	Prof. Fraser and the medical staff of the school.
Tuesday ..	At Great Ormond-street Children's Hospital.		At Great Ormond-street Children's Hospital.	
Wednesday ..	Chronic Arthritis.	Dr. C. W. Buckley and the staff of the school.	Chronic Rheumatic Affections.	Dr. Buckley and the staff of the school.
Thursday ..	Some common Respiratory Diseases.	Dr. J. G. Scadding and the staff of the school.	Pulmonary Tuberculosis in General Practice.	Dr. L. S. T. Burrell and the staff of the school.
Friday	Head Injuries.	Mr. Lambert Rogers and the staff of the school.	The diagnosis of Acute Abdominal Conditions.	Prof. Grey Turner and the surgical staff of the school.
Saturday ..	Demonstration of Local Anæsthesia.	Dr. R. E. Apperly and the surgical staff of the school.	(12.30–1.30.) Discussion on the requirements of a Post-graduate Refresher Course.	Members of the class.

this country or from abroad as often as possible. In suitable instances the visitor will be invited to take charge of wards for a time and take part in the routine work of the hospital and school.

VII.—Graduates who are carrying out investigations and require clinical material for their researches can be accommodated in small numbers. It has not been possible as yet to provide laboratories for the department of medicine other than the ward side-rooms, but the plans for such laboratories have been prepared and their construction is to be commenced immediately. It will be possible to accommodate more research workers when these are completed.

VIII.—Graduate students attending for shorter periods than a month can be accepted in small numbers, but it may not be possible to arrange special courses of work for them. If they desire to study a special branch of medicine it may be possible to attach them to a member of the staff working in that special branch.

IX.—Visitors for short periods will always be welcomed, and arrangements will be made to enable them to attend and to see whatever aspect of the work of the department they desire.

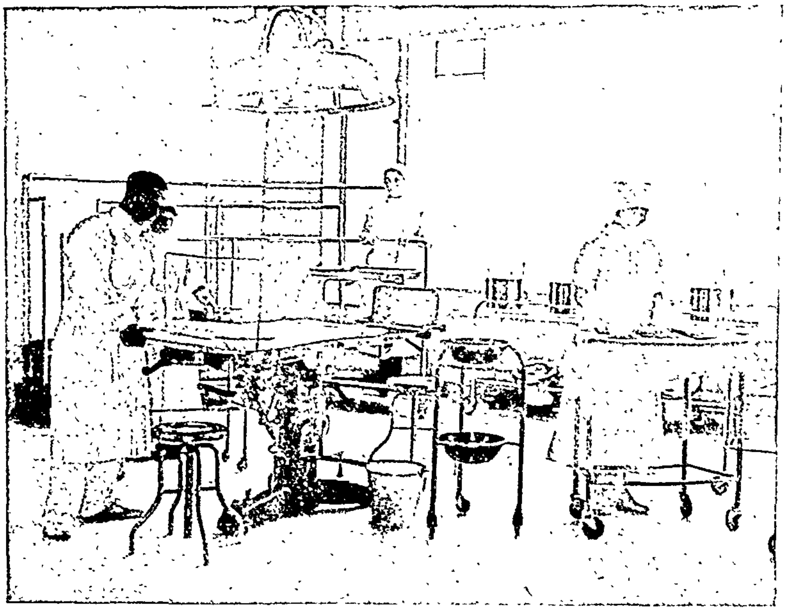

FIG. 6.—One of two new operating theatres on the top floor of the new hospital wing. In the background is seen a movable gallery for visitors. The sterilising room is common to the two theatres. The anæsthetic rooms adjoining can be darkened and used as adjuncts to the theatres for examinations or operations best conducted in *artificial light*. The surgeon's room is fitted for smaller demonstrations such as can be carried out between operations. A laboratory is provided in close proximity to the theatre.

Department of Surgery

Much of what has been said about the department of medicine applies in general to the department of surgery. At the moment the number of beds is rather less, 120 to 130, but next year it is intended to add another 50 in a new block of which plans have been approved. The staff is on the same basis as for the medical department though slightly fewer in number and consists of

Professor . . Reader . . 2 First Assistants . . 4 House Surgeons

and an experienced L.C.C. officer who acts as emergency surgeon and liaison officer. The members of the staff have all some special experience: the reader in neurological surgery, one assistant in urology, and the other in fracture work and orthopædics. The staff will thus include, beside the professor and the reader, three other members, one of whom will act in the capacity of resident surgeon, dealing with emergencies at such times as the visiting staff is not available. The other two members, of the standing of senior surgical registrars, will carry out and supervise special investigations, pre- and post-operative treatment and so forth. Each will have some special line in which his experience is valuable and which he will have the opportunity of developing. Four house surgeons have been appointed, their periods overlapping so that some would always be accustomed to the running of the unit. A considerable part of the teaching will be carried out in the demonstration theatre to which patients can be wheeled from ward and out-patient department. Ward visits, however convenient and delightful, are only suitable for demonstrating to a limited number and have the drawback that the remarks of the teacher have to be regulated to avoid hurting the feelings of the patient or other persons in the ward. Certain classes will also be held in the out-

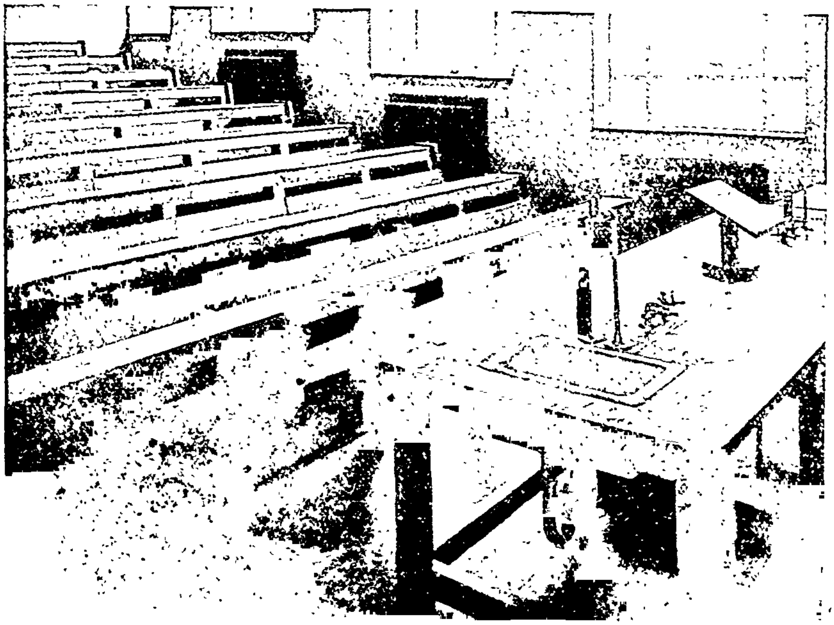

FIG. 5.—One of the two lecture theatres. The one on the ground floor, used as a clinical theatre, is fitted with projection lantern and cinematographic apparatus. Each of the theatres can accommodate about 100 students.

It will thus take a part, though probably a minor one, in "refresher" courses and participate to some extent in other activities of a similar nature. The special object of the department will be to provide medical men and women with facilities for advanced study in all branches of pathology. Such students will be of two main types :—

(A) Those who desire to gain general training and experience in one or more branches of the subject.

(B) Those who wish to devote themselves to the investigation of some particular problem.

The department will in fact be concerned with students of pathology rather than with students of medicine to whom pathology is but one of several subjects engaging their attention.

In order to meet the needs of such students, especially those in Group A, the department must have access to teaching material. This can only be obtained from the routine pathological services of the hospital, and the department will therefore be responsible for these services. Such an arrangement has the advantage of ensuring that close association between the clinical and the laboratory sides which is so desirable. While chiefly concerned with the problems of the student of pathology, an important function of the department will be to collaborate with members of the clinical departments in combined investigations and to provide facilities and assistance to members of the staffs of these departments who may wish to undertake personal laboratory work. The successful development of a department of this kind demands that every member of its staff shall be actively engaged in research, for an institute which will attract serious students of pathology who wish to undertake original investigations, and to be trained in the methods of research, can only be built up if the staff are themselves students and not merely teachers. For this reason care has been taken to provide a staff sufficiently large to ensure that each individual may have adequate time, apart from his routine duties, to devote to his personal work. The organisation of the department provides for readerships in morbid anatomy and histology, bacteriology, and pathological chemistry; and each reader will have at least one assistant. Students can be admitted into any one of these three subdepartments, or divide their time among two or all of them. There is, in addition, a subdepartment of clinical pathology where candidates for the University diploma in clinical pathology will find their requirements met.

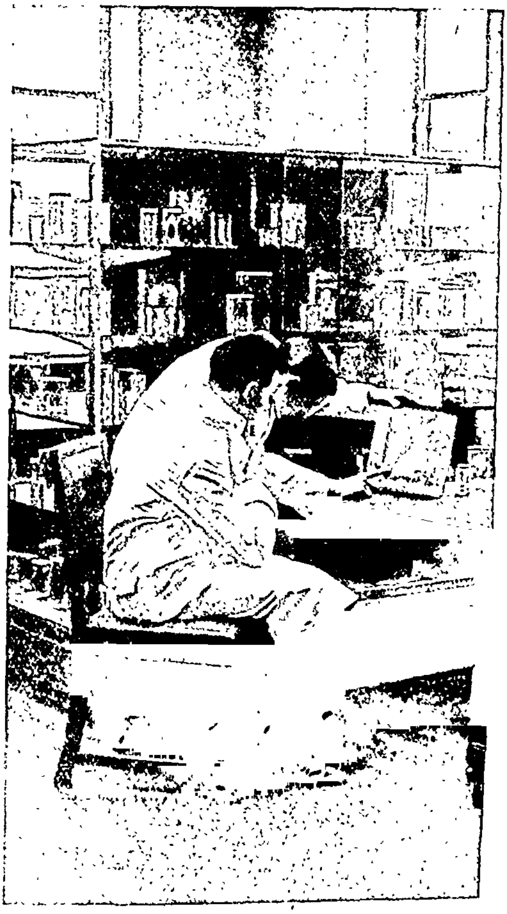

FIG. 11.—A corner of the museum on the first floor. The available space is limited and the museum will be strictly a teaching one.

Instruction in pathology at the Hammersmith school will be of a very personal character. Students will work in the laboratories under direction of members of the staff carrying out the ordinary pathological investigations for the hospital, and research students will be mainly occupied with their individual problems. Formal teaching will play little part in the scheme, but pathological conferences open to anyone who desires to attend will be held on one or two afternoons a week when the routine work of the department will be discussed by the staff and the students. Post-mortem demonstrations are now being held every day when opportunity

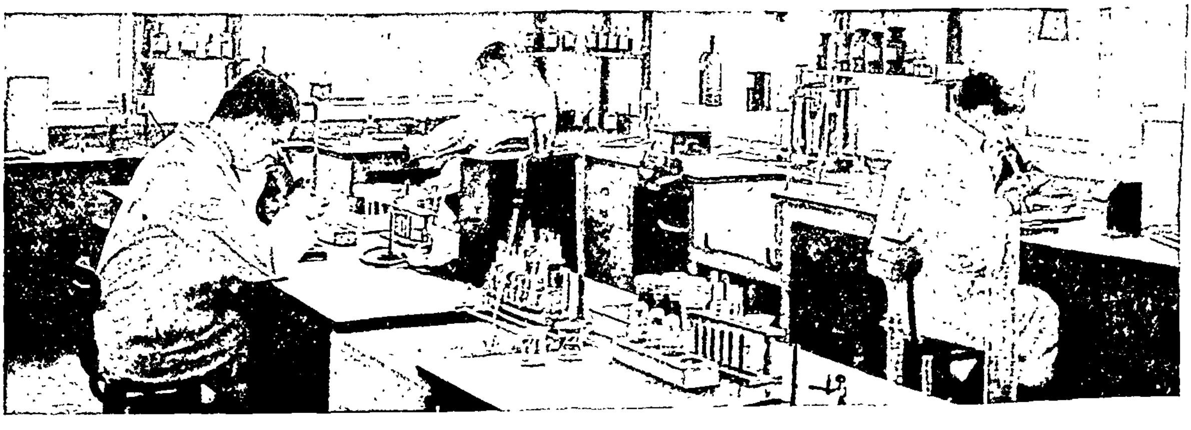

FIG. 10.—A histological laboratory adjoining the post-mortem room.

offers at 1.30 P.M. These are open to everyone, and the professor of pathology will combine with the professor of medicine in a clinical pathological conference once a week. One of the other weekly conferences will be devoted to the post-mortems of the week in which cases will be dealt with from a more pathological point of view, and students will be able to enter more deeply into the bacteriology, chemical pathology, and biochemistry of the material.

It will now be obvious that pathology at the Hammersmith school is not to be regarded as a separate *Fach* or discipline but as a habit of mind pervading every aspect of medical inquiry.

List of the Professorial Staff of the School

Dean: Col. A. H. Proctor, D.S.O., I.M.S.

MEDICINE

Professor	F. R. Fraser, M.D. Edin., F.R.C.P. Lond.
Reader	R. S. Aitken, D.Phil., Oxon., M.B.N.Z., M.R.C.P. Lond.
Senior Assistant M.O.	Benjamin Barling, M.D., M.R.C.P.
First Assistants—	
General Medicine ..	G. H. Jennings, M.R.C.P. Lond.
Respiratory ..	J. G. Scadding, M.D., M.R.C.P.
Cardiovascular ..	P. H. Wood, M.B. Melb., M.R.C.P.
Immunities and Infections	C. H. Stuart Harris, M.D., M.R.C.P.
House Physicians ..	R. G. B. Gilbert, M.B. Lond., N. V. Birrell, M.B. Glasg., D.P.H., T. R. C. Fraser, M.B. N.Z. R. F. Fairweather, M.B. St. And., E. C. Allibone, M.B. Leeds.

SURGERY

Professor	G. Grey Turner, M.S. Durh., F.R.C.S. Eng., F.A.C.S.
Reader	Lambert Rogers, M.Sc. Wales, F.R.C.S., F.R.A.C.S., F.A.C.S.
Senior Assistant M.O.	A. Elliot-Smith, F.R.C.S. Eng.
First Assistants—	
Fractures and Orthopædics ..	A. J. Watson, M.B., M.R.C.P. Lond., F.R.C.S. Eng.
Genito-urinary ..	A. L. Light, M.S. Lond., F.R.C.S.
Casualty Officers ..	H. D. Clarke, M.B. Dub., I. H. Gosset, M.R.C.S., B.Ch. Oxon.
House Surgeons ..	M. T Greig, B.Sc., M.B. Otago, G.W.D. Reeves, M.R.C.S. Eng., Margaret P. Miller, M.B. St. And., Mahmud Hafezi, M.R.C.S. Eng.

OBSTETRICS AND GYNÆCOLOGY

Professor	James Young, D.S.O., M.D., F.R.C.S. Edin., F.C.O.G.
Reader	J. Chassar Moir, M.D., F.R.C.S. Edin., M.C.O.G.
Senior Assistant M.O.	A. D. Morris, M.D. Brux., M.B. Lond.
First Assistant ..	G. W. Theobald, M.D., M.R.C.P. Lond., F.R.C.S. Edin., F.C.O.G.
House Surgeons ..	M. A. Robertson, M.B. Camb., J. Ewing, M.B. Leeds.

PATHOLOGY

Professor	E. H. Kettle, M.D., F.R.C.P. Lond.
Readers—	
Bacteriology ..	A. A. Miles, M.A. Camb., M.R.C.P.
Pathological Chemistry ..	Earl J. King, M.A., Ph.D. Canada.
Morbid Anatomy	John Gray, M.D. Edin.
Assistants—	
Clinical Pathology	Janet M. Vaughan, D.M. Oxon., M.R.C.P. Lond.
Bacteriology ..	P. H. Martin, B.M. Oxon., M.R.C.P. Lond., D.T.M. & H.
Pathological Chemistry ..	G. A. D. Haslewood, M.Sc. Oxon.
Morbid Anatomy	C. V. Harrison, B.Sc., M.B. Wales, M.B. Lond.

CONSULTING STAFF

Dermatology	Dr. R. T. Brain.
Orthopædics	Mr. E. Laming Evans.
Psychology	Dr. Aubrey Lewis.
Pediatrics	Dr. Alan Moncrieff.
Ophthalmology ..	Mr. R. C. Davenport.
Ear, Nose, and Throat	Mr. Sydney Scott.
Neurology	Dr. J. Purdon Martin.

MEDICINE AND THE LAW

Capacity of Injured Workman

In Cunard Steamship Co. *v.* Moore the House of Lords not long ago refused to allow the Court of Appeal to overrule a county court judge on a point of medical evidence. It was a case of workmen's compensation. Moore, working on a ship, had his left arm caught in the rope of a derrick. Both bones of the left forearm and also two ribs on the left side were fractured. He was paid full compensation at the agreed rate of £1 6*s.* 4*d.* per week from the end of 1930 to Feb. 9th, 1933. Dr. X then certified that Moore had so far recovered as to be able to perform heavy work; his wrist movement would improve by doing work. Accordingly the employers gave notice under Section 12 of the Act and diminished the weekly payment to 10*s.* Moore asked for light work for five and a half days a week at an ordinary dock labourer's pay. This was refused. Subsequently he asked for arbitration, claiming compensation on the basis of total incapacity as from Feb. 25th, 1933. The Steamship Co. answered that in the month of February Moore was only partially incapacitated and had since entirely or almost entirely recovered. At the arbitration in the Liverpool county court Dr. Y, giving evidence on behalf of Moore, said the man could not do full work and no improvement was to be expected. Dr. X testified on the other hand that Moore's injuries would cause him discomfort but not incapacity for dock labour; he could now do full work and would improve and be all right in six months. The county court judge, accepting the evidence of Dr. X, found that Moore was, at the date of the hearing, fit for full work and that his incapacity had ceased. On appeal the Court of Appeal held that the evidence in the county court had shown that the capacity for work was not that of an ordinary healthy man and that there was no evidence that the incapacity had ceased. The Court of Appeal sent the case back to the county court for assessment of the amount of compensation payable. In January, 1934, an award of 10*s.* a week was made, to begin at June 16th, 1933, and to continue during the partial incapacity. The Cunard Co. accepted this award for four months and paid compensation thereunder; it then appealed to the House of Lords, where the order of the Court of Appeal was discharged and the county court judge's decision was restored. Lord Blanesburgh said that the true effect of the evidence given by Dr. X (that the incapacity had now ceased) was something which could be better appreciated by the county court judge who heard the evidence personally than by the appellate courts which did not hear it. There was evidence on which the county court judge could find that incapacity "from every relevant point of view" had ceased. It was of the first importance, said Lord Blanesburgh, that the finality of an arbitrator's findings of fact in workmen's compensation cases should be jealously maintained.

Handwriting Experts

Of all species of expert witnesses the handwriting experts seem to be the most vulnerable. Defending advocates never spare an allusion to the Beck case and now the Binney case adds another arrow to their quiver. Binney was indicted at the Derbyshire assizes last July for having sent letters to a Mrs. Clift demanding money with menaces. Although the charge accused him of having "uttered" the letters and not of having written them himself, the prosecution ran its case on the basis that the handwriting was that of Binney. Convicted in July, he asked on August 15th for leave to appeal. There was no fresh evidence as a ground for disturbing the jury's verdict, and the Court of Criminal Appeal dismissed his application. On August 28th another letter of the same character reached Mrs. Clift. Binney then petitioned the Home Secretary. On March 5th and April 3rd two more such letters arrived and a few days ago, on the eve of the reconsideration of the case by the Court of Criminal Appeal at the instance of the Home Office, a fourth letter came. At the recent hearing there was expert evidence (apparently not disputed by the Crown) that these four post-conviction letters were written by the same hand as the letters on which Binney had been found guilty. An officer from Dartmoor Prison, where Binney was serving his sentence, said that was no record of anyone having visited the man in prison; there was further evidence that the letters could not have been sent from the prison. It was of course possible that Binney had written the four letters before his trial to be posted at intervals later; but the post-conviction letters dealt with events which happened while he was in prison and one letter actually named the precise term of sentence he had received. It was possible too that a confederate was working with him and was managing the post-conviction correspondence; but the jury at the assizes had convicted Binney on the basis of his having been the sole person concerned. "It is clearly established," said Lord Hewart, in delivering the judgment which has now set Binney at liberty, "from materials which were not open to any court in July, that there is a hand somewhere, other than the hand of Binney, which is responsible for the physical act of writing these letters." The court was obliged to conclude that, if the jurors had had these fresh materials before them, they would not have come to the conclusion that he was guilty of the charge.

The difficulty of the handwriting expert is that he has often to bear a disproportionate burden in supporting a case where other kinds of evidence are missing. It is for the jury to say what weight is to be attached to what he says. A jury can see similarities of script or spelling readily enough, but it is convenient that someone should point them out first. Sometimes the handwriting expert can make an overwhelming case with decisive effect. This happened on the prosecution of Bruno Hauptmann, the alleged kidnapper of the Lindbergh baby. A letter demanding a ransom was left in the child's nursery on the night of the crime; other letters were written in the course of extracting the 50,000 dollars which Colonel Lindbergh paid in vain; one letter concerned the production of a "token" of authenticity, namely, the garment which the child had been wearing. There were 14 of these "ransom notes" and 16 acknowledged specimens of Hauptmann's actual writing, such as his application for a motoring licence and certain specimens written by him at the dictation of the police. Particular letters, such as an uncrossed "t," and a peculiar "x" which resembled a double "e," were common to all the writings. Spelling mistakes made another connecting link—"note" for "not," "gut" for "good," "mony" for "money," "boad" for "boat," "hte" for "the," and so on. Another was the idiosyncrasy of hyphenating "New-York." All these points a jury could easily follow, and their cumulative effect would be strong. These and other matters (such as the tracing of the ransom money and the identification of wood in the kidnapper's ladder with wood taken from Hauptmann's house) are admirably presented in a recent account of the case (The Lindbergh Crime, by Sidney B. Whipple, 6*s.* net, Methuen). It is a thrilling story.

A Problem of Professional Secrecy

There is no end to the problems which can arise or can be invented in respect of professional etiquette. Life, unhappily, is not so simple that the questions can always be answered with an absolute "Yes" or "No." Here is a conundrum about the duty of secrecy. A doctor attends a woman of about 75 in excellent health. The patient has a son with expectations under his mother's marriage settlement. He stands to receive a certain sum from the estate and is anxious to raise money on his prospects. Naturally the amount of the advance which he can obtain from an insurance company or other lender will depend on the probable duration of his mother's life. His solicitor, who is arranging the transaction, asks the doctor to express an opinion how long the lady is likely to live. Is the doctor betraying professional confidence if he does so?

The first reflections that suggest themselves are mainly negative. If the patient herself gave the doctor permission to answer the solicitor's question, all would be well; but presumably the matter is too delicate for the son to mention to his mother, though this is the proper way to regularise matters. The son has every right to arrange the advance in his own interests but he is not his mother's agent in so doing; consequently, as a matter of strict technicality, he has no authority to put the question to his mother's doctor for his own commercial purposes—still less has the solicitor. Certainly it would seem improper for the doctor to furnish the solicitor with a formal opinion about the patient for a fee without the patient's consent; if there is doubt whether the doctor should divulge information, he had better not sell it. Yet in spite of the rigid rules of non-disclosure and the practitioner's instinctive desire to keep on the right side in a case of doubt, there are two other considerations which may seem to permit a reasonable latitude. First, there is never the same degree of secrecy where relatives or members of the same household are concerned. A father will obtain frank information from the doctor who examines his child; he is legally and morally responsible for his children's health. By analogy a mistress who calls in a doctor to attend a domestic servant will be told whatever is necessary in the interests of the patient's treatment. And family ties of affection and sympathy make it natural that a medical practitioner should be willing to discuss the health of a patient with other members of the patient's household. Nor is the commercial element entirely irrelevant. There may be a question of economy in the matter of terminating a servant's contract of service for illness or of sending a member of the household to hospital. In the case of the son in the problem, if he asked the question

"Well, doctor, how long do you think my mother is likely to live ?" it is unlikely that the doctor would feel obliged by an iron-bound sense of etiquette to refuse a reply, though the reply might not be sufficiently formal for the purpose of the son's transactions with the solicitor. Secondly, it is to be remembered that the patient in our problem enjoys good health. There is thus the less to divulge. Certain legal cases and judicial dicta have indicated that the patient may have a right to sue a too loquacious doctor for damages. But neither as a matter of law nor as a matter of etiquette has a doctor done much harm if he replies "your mother enjoys excellent health and I know no reason why she should not be spared to you for many years yet." As a matter of commerce, of course, the answer is little help to anyone who wants to raise money on expectations maturing at the patient's death. Terms based on the normal expectation of life can hardly be improved for the reversioner unless the report of the patient's health is unfavourable.

These casuistical questions as to what Dr. A should do in a particular situation invite diffuse speculation. Such situations doubtless occur in real life and somehow Dr. A manages to meet them without sensational consequences.

PUBLIC HEALTH

Economic Depressions: 1862 and 1935

THE recent issue by the Ministry of Health of a report[1] on conditions in an area subject to prolonged unemployment makes it opportune to recall the last detailed medical report on such a subject, that presented by Dr. (later Sir George) Buchanan at the time of the distress in the cotton trade consequent upon the American Civil War.[2]

Arnold's "History of the Cotton Famine" passes under review the period from April, 1861, to July, 1863, and indicates its peak as occurring in 1862, in the early months of which year "gaunt distress was advancing with rapid strides." The general use of the term "cotton famine" is itself ominous, though the historian is careful to dissociate it from the extreme meaning of the similar term as applied to the potato famine of Ireland: "but no such sorrow, no such shame as this, lies at the door of the wealthiest of the English counties. Suffering there was, sad and enduring, but not such as this."

The distress struck suddenly a wide community unprovided with social services as we understand them to-day, and there were no resources save the rapid expansion of poor-law relief and public charity. The extent of the calamity and the measures of relief are set out in Arnold's History and in Dr. Buchanan's report. When Dr. Buchanan wrote, in December, 1862, it was estimated that of half a million cotton workers half were wholly unemployed, a third were working short-time, and only a sixth were in full work. It was further estimated that another half a million people were directly dependent upon the cotton operatives and so involved in the calamity. The scale of relief which was adopted varied as between different boards of guardians but at the time of the report the average income from all sources was taken as nearly 2*s.* per head per week, exclusive of clothing, bedding, and firing which might be supplied in addition. There was, however, a sliding scale of relief according to the number in family and on the 2*s.* basis this is indicated as being for one person 3*s.* 4*d.*, man and wife 6*s.*, man, wife, and one child 7*s.*, with an additional allowance of 1*s.* for each child, so that with six children the family relief was 12*s.*, considerably less than 2*s.* per head. It was further estimated that in a household of four the amount available for food was 1*s.* 5*d.* per head per week. The Manchester retail prices of certain articles of food are quoted in the report on a quantity regarded as the average a single person would be likely to purchase for a week's consumption. If we compare these prices with those given as the B.M.A. mean in Appendix C of the report of the Committee on Nutrition we have the following figures:—

	1862. *s.*	 *d.*	1933. *s.*	 *d.*
Bread, 8 lb.	1	0	1	2
Potatoes, 5 lb.		3		3·7
Oatmeal, 2 lb.		4		5
Tea, 1 oz.		3		0·8
Sugar, ½ lb.		2·5		1·125
Bacon, ¼ lb.		1·75		1·5
	2	2·25*d.*	2	2·125*d.*

The fall in the price of tea and sugar, important articles of consumption, is noticeable. On the other hand, rent was a much smaller item, the figure quoted being 1*s.* per week. When due allowance is made for variations in the value of money, it is obvious that the financial provision was on a lower scale than prevails to-day.

What was the reaction on health to these conditions ? Dr. Buchanan's report is based on his own observations and those of thirty medical practitioners holding public appointments. There does not appear to have been any general increase in mortality: the average number of deaths from all causes for the years 1857–61 in the twelve unions visited is given as 8353, while the figure in 1862 was 7427. An examination of the Registrar-General's tables shows the annual rate of mortality per cent. in Lancashire over the years 1854 to 1863 to have been 2·701, 2·680, 2·464, 2·628, 2·719, 2·454, 2·371, 2·592, 2·560, 2·629. This aspect of the situation is dealt with at some length in Arnold's "History" where emphasis is laid on the lesser consumption of alcohol and the increased care of children due to the enforced attendance at home of their mothers. The following quotation is illustrative:

> It was well said by the sexton of one of the most important towns in Lancashire, when asked how it happened that his lugubrious trade was unusually inactive during the summer of this year, "Well, thae sees," he answered, "poverty seldom dees. There's far more kilt wi' o'er-heytin' an' o'er-drinkin' nor there is wi' bein' pinched,"—a truth which contains a moral lesson valuable to all classes.

This absence of an increased total death-rate is, however, countered by increased manifestations of morbidity in various directions which are considered by Dr. Buchanan under several headings of causation. He refers to loss of strength, colour, and flesh among the *cotton-workers as a body*; to the observations made that "the parents have lost their health much more generally than the children, and particularly that the mothers, who most of all starve themselves, have got pale and emaciated"; to a generally asthenic type of disease; to a hæmorrhagic tendency; to a high prevalence of bronchitis and pneumonia; to an unparalleled quantity of itch; to grave complications of measles and scarlatina; and to an outbreak of typhus in a severe form, in which the death-rate at Preston was 23 per cent. The conclusions of the report are as follows:—

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[1] Report of an Inquiry into the Effects of Existing Economic Circumstances on the Health of the Community in the County Borough of Sunderland and Certain Districts of County Durham. Cmd. 4886. See THE LANCET, May 4th, 1935, p. 1058.

[2] Dr. Buchanan's report (Dec. 30th, 1862) on the Health of the Operatives as affected by the Prevailing Distress. Fifth Rep. Med. Officer of the Privy Council, 1862, Appendix V.

> 1. That while actual death from starvation has been of the rarest occurrence, there is a peculiarly low state of health among the unemployed operatives of the cotton towns, showing itself particularly in the elder people, and predisposing to various diseases.
>
> 2. That scurvy and other evidences of a tendency to hæmorrhage have been seen with remarkable frequency.
>
> 3. That lung diseases of a sort to be induced and aggravated by exposure have been rife, even out of proportion to the cold of the season.
>
> 4. That epidemic measles and scarlatina have habitually exhibited peculiarities that in ordinary times are only met with in weakly constitutions. That true typhus fever has shown itself. That epidemic diarrhœa has been below the average, except in Preston, which is the town that has suffered most from typhus fever.
>
> 5. That disease from drunkenness and from neglect of children has been less common than in ordinary times.

The report recently issued by the Ministry of Health on the existing conditions in Sunderland and certain districts of Durham was reviewed in our columns on May 4th. It refers to a period of more prolonged distress, countered by more advanced measures of public health.

Pasteurising Plants

The consumption of pasteurised milk is rapidly extending and it becomes ever more important that the milk should be pasteurised properly so that the term "pasteurised milk" should really connote safety. For this reason Sir Weldon Dalrymple-Champneys was invited by the Ministry of Health to prepare a report on the supervision of milk pasteurising plants which has just been issued.[1] Sir Weldon has no doubt that pasteurisation carried out in such a way as to meet the requirements of the Milk (Special Designations) Order of 1923 renders milk safe. Milk can, however, be recontaminated with pathogenic organisms after pasteurisation and, unless the milk is heated so long as to impair its physical qualities, some spore-bearing organisms are apt to survive. For this reason pasteurised milk will ultimately go sour. But even efficient pasteurisation need not interfere with the preservation of the cream line which is so important a commercial requirement, for the depth of cream separating out on the top of the milk on standing is regarded by many sections of the public as an indication of quality. Sir Weldon says he has seen many pasteurised milks properly pasteurised in efficient plants which showed a cream line at least as good as the majority of raw milks. Failure to secure efficient pasteurisation arises chiefly from lack of knowledge how to construct, install, and use efficient apparatus, and the report is an endeavour to give in concise form the information needed by officers of a local authority for the efficient discharge of their duties in connexion with licensing and supervising such plants. Sections on bottle filling and bottle washing have been added, for inefficiency at these stages is a common cause of failure to attain the bacteriological standard for pasteurised milk laid down in the Order.

Grit and Fumes in London Air

The London County Council is a jealous custodian of the amenities of the metropolis and no respecter of persons when these amenities are imperilled. The furnaces of the Stepney generating station in Limehouse have for 15 years past emitted smoke and grit of which the inhabitants have complained. An injunction was obtained against the borough council in June, 1920, and upheld on appeal when the court ruled that the nuisance was a real one, even taking into consideration the character of the neighbourhood. Two years ago complaints were again made and the L.C.C. chemist reported that one chimney-stack was discharging in 24 hours nearly 4 cwt. of grit containing 28 per cent. of unburnt matter. The Electricity Commissioners who were then consulted suggested the erection of a new chimney and the installation of dust extraction plant, measures which could be completed within 12 months. Although the twelvemonth is up it seems that nothing has been done to implement these measures, and temporary remedies have proved inadequate. The L.C.C. is now to press the Minister of Health for leave to take action against the Stepney council.

At the new Battersea power station the plant for eliminating sulphur fumes, smoke, and grit has fulfilled the expectation raised in the experimental stage, but in view of the second half of the station still to be erected the L.C.C. is unwilling to take any risk because the problem is a new one and a further improvement in the processes may reasonably be anticipated. The L.C.C. would like to see a Government committee set up to undertake research into the general question of the best means of removing sulphur compounds from flue gases. Representations to this effect are to be made to the Ministers of Transport and of Health.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 4TH, 1935

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 0; scarlet fever, 1905; diphtheria, 915; enteric fever, 11; acute pneumonia (primary or influenzal), 1182; puerperal fever, 47; puerperal pyrexia, 114; cerebro-spinal fever, 22; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 10; dysentery, 13; ophthalmia neonatorum, 103. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 10th was 3403, which included: Scarlet fever, 1040; diphtheria, 1368; measles, 29; whooping-[illegible] fever, 27 mothers (plus 7 babies); [illegible]; poliomyelitis, 3. At St. Margaret's [illegible]ies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 31 (0) from measles, 7 (2) from scarlet fever, 33 (4) from whooping-cough, 39 (7) from diphtheria, 51 (16) from diarrhœa and enteritis under two years, and 125 (16) from influenza. The figures in parentheses are those for London itself.

Influenza is on the wane, but Liverpool reported 14 deaths, Manchester 9, Middlesbrough 7, Newcastle-on-Tyne 6, Salford 4, no other great town more than 3. Five fatal cases of measles were reported from Liverpool and from Wigan, 4 from Cardiff. Preston had 4 deaths from diphtheria.

The number of stillbirths notified during the week was 273 (corresponding to a rate of 36 per 1000 total births), including 40 in London.

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[1] Ministry of Health Reports on Public Health and Medical Subjects, No. 77. H.M. Stationery Office. Pp. 47. 1s. 3d.

PANEL AND CONTRACT PRACTICE

Employment of Assistants

THE medical benefit regulations lay it down that an insurance practitioner may not have included in his list more than 2500 insured persons (in some areas the maximum is determined by the local insurance committee at a lower figure) unless he is working in partnership, in which case any member of the partnership may accept up to a maximum of 3000 provided the average for the partnership does not exceed 2500. If an assistant is employed with the consent of the insurance committee the principal may accept further insured persons up to a maximum of 1500. Insurance committees in consenting to the employment of an assistant usually stipulate that the assistant shall have his name included in the Medical List, and while this is a useful precaution it sometimes leads to misunderstanding inasmuch as there is no obvious provision to prevent an assistant accepting insured persons in his own name. For various reasons, however, it is undesirable that he should do so, particularly as in many cases the assistant is merely waiting until he can secure a practice of his own—it is no longer correct to describe him as waiting for his beard to grow. Assistants consequently change quite often, and apart from the undesirability of frequent changes of doctor requiring to be notified to the patients, it is fundamental that the principal should be the responsible practitioner in relation to all the patients associated with the practice.

The regulations are silent as to the definition of an assistant, but clearly it is necessary that both practitioners and committees should have a definite understanding of what constitutes an assistant, especially when the assistant is engaged in order that the principal may exceed the normal limit of acceptances. Other things being equal it is a mathematical certainty that the practitioner with (say) 2550 insured persons will require less help than his neighbour with 3800. What then does satisfy the requirement to employ an assistant? In London the committee require that the principal shall have at all times the first call on the services of the assistant even if he is not employed full time. A practitioner with patients of his own cannot fulfil this condition, as his responsibility for his own patients must form the first call on his services.

In some areas there is a clause in the distribution scheme which provides that even if a practitioner's list temporarily exceeds the permitted maximum he shall not be paid in respect of the surplus, and as a logical outcome of this provision it is necessary to ascertain quarter by quarter that practitioners, who, owing to their having been given consent to employ an assistant, have an additional number of patients, have actually continued to employ their assistants. At a recent meeting of the London insurance committee it was reported that two practitioners with slightly over the permitted maximum for a practitioner working single-handed had been without assistants, in one case for a complete quarter, and in the other for about five weeks. In the former case the termination of the arrangement was deliberate and the remuneration of the practitioner was reduced accordingly, but in the other efforts to obtain a new assistant had been made without success, and in view of this fact and of the provision in Clause 6 (5) of the allocation scheme that a practitioner whose list is found to be in excess has a period of two months from the date on which the excess was discovered within which to take a partner or assistant, or to reduce his list to the appropriate figure, the committee decided that for the quarter in question payment should be made in accordance with the number of insured persons on the practitioner's list.

Prescribing

During 1934 prescriptions for insulin to the number of 31,357 were dispensed for insured persons in London at a total cost of £9392 16*s.* 11*d.*

Modern conditions of life are sometimes accused of causing digestive troubles. During the month of January 11,706 prescriptions for 40,904 apothecaries' ounces of non-proprietary compound bismuth powders were issued in London. The ingredient cost of a ton and a quarter of this preparation was £264 11*s.* 8*d.* Only eight prescriptions for proprietary brands were issued during the same period.

OBITUARY

SIR THOMAS STAFFORD, Bt., P.C., F.R.C.S.I.

LATE MEDICAL COMMISSIONER, LOCAL GOVERNMENT BOARD, IRELAND

THE death occurred on Saturday last, May 11th, of Sir Thomas Stafford, a prominent worker in the cause of public health in Ireland. Born in 1857, son of John Stafford of Portobello, a well-known Roscommon family, he received his medical training in Dublin and qualified in 1882 with the double diploma of the Irish Colleges. He entered practice in his native county as dispensary doctor at Boyle, but shortly afterwards obtained the position of medical inspector to the Local Government Board of Ireland. He took the D.P.H. of the Irish Colleges in 1898 and was admitted F.R.C.S.I. in 1899, having already been appointed a medical member of the board, a position which he held for many years. He became prominent in the great health campaign inaugurated by Lady Aberdeen, and his services when he became a medical commissioner of the board were conspicuous in the cause of public health. A courteous, sympathetic, and particularly able administrator, he gave every encouragement in his power to all movements for the improvement of the public health of the country, and of the professional status of the medical man in the poor-law service. In 1906 he was appointed C.B., in 1913 was created a baronet, and shortly after became a member of the Irish Privy Council. He was a D.L. for Co. Roscommon.

On his retirement from his official duties, Sir Thomas Stafford became a great supporter of outdoor sport, fishing, shooting, and especially racing, in connexion with which he was for a time a steward of the Irish Turf Club. His death occurred at Lord Headfort's house in Kells; he had been in bad health for some time previously. He married in 1890 Frances, only child of the late Colonel E. R. King-Harman; she predeceased him and his son Captain Cecil Stafford King-Harman succeeds to the baronetcy.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Rear-Admiral P. Pick to *Pembroke* for R.N. Hosp., Chatham, and as Medical Officer in Charge.

Surg. Rear-Admiral W. W. Keir, C.M.G., has retired at his own request on relinquishing the command of the R.N. Hospital at Haslar.

Surg. Rear-Admiral Keir was the senior officer of his rank on the active list and entered the Navy on Nov. 8th, 1898, and served with distinction in the war. In 1928–30 he was in charge of the naval hospital at Hong-Kong. Consequent on the vacancy thus occurring, Surg. Capt. F. J. Gowans, senior medical officer in the hospital-ship *Maine*, has been promoted to Surg. Rear-Admiral. He joined the Navy in November, 1903, and served as staff surgeon in the *Queen Mary*, *Challenger*, and *Albion*. From 1928 he was surgical specialist at Haslar Hospital and became Surg. Capt. in December, 1929.

Surg. Capt. F. J. Gowans, M.B., to rank of Surg. Rear-Admiral.

Surg. Comdrs. W. H. Murray to *President* for course; and M. B. Devane to *Keith*.

Surg. Lt.-Comdr. (D) T. E. Brevetér to *Victory* for R.M. Infirmary, Eastney.

Surg. Lt.-Comdr. D. C. Drake to *Drake* for Plymouth Hospital.

Surg. Lt. D. G. Yendoll to *Pembroke* for R.N.B.

Surg. Lt. W. S. Davidson, short service engagement terminated.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdr. W. F. W. Betenson to *St. Vincent*.

Surg. Lt. H. L. Hoffman promoted to Surg. Lt.-Comdr.

Surg. Lts. J. N. Matthews to *Nelson;* C. Seeley to *Curacoa;* and G. H. Sellers to *Tiverton.*

Proby. Surg. Sub.-Lt. P. H. K. Gray to *Rodney.*

ROYAL ARMY MEDICAL CORPS

Short Serv. Commissions.—B. d'Epinay Barclay to be Lt. (on prob.).

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. P. Dwyer, M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Lt. E. F. S. Morrison to be Capt.

K. G. W. Saunders (late Offr. Cadet, Univ. of Lond. Contgt. (Med. Unit), Sen. Div., O.T.C.) to be Lt.

G. O. Gauld (late Offr. Cadet, Cambridge Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

R. D. Forsyth (late Offr. Cadet, Glasgow Univ. Contgt., Sen. Div., O.T.C.), to be Lt.

ROYAL AIR FORCE

Flight Lt. J. S. Carslaw is granted a permanent commission in this rank.

Flight Lt. O. S. M. Williams to Air Armament School, Eastchurch.

INDIAN MEDICAL SERVICE

The undermentioned appts. have been made:—

A.D.M.S.—Col. R. E. U. Newman, O.B.E., M.C., M.B., Brit. Serv.

D.A.D.P.—Capt. A. T. H. Marsden, M.D., R.A.M.C.

Majs. to be Lt.-Cols.—A. H. Shaikh, R. M. Kharegat, and J. C. Pyper, O.B.E.

The appts. of the undermentioned officers are confirmed:—

Lts. (now Capts.).—B. F. B. Russell, R. L. H. Minchin, W. G. Kingston, J. Edis-Myers, R. de Soldenhoff, C. J. Hassett, R. R. Prosser, E. Parry, W. G. Kennedy, and P. I. Franks.

The undermentioned appts. are made:—

To be Lts. (Temp. Commns.).—Harbans L. Khosla, Nisar Mohammad Durrani, Suraj Prakash Wanchoo, Sharad Chandra Misra, and Shri Rameshwar.

The undermentioned officers have vacated appts.:—

A.D.M.S.—Col. G. A. D. Harvey, C.M.G., V.H.S., Brit. Serv.

D.A.D.P.—Maj. A. D. Loganadan, I.M.S.

COLONIAL MEDICAL SERVICE

Dr. N. J. Dias has been appointed Government medical officer, British Guiana, and Dr. T. A. Redhead and Dr. J. E. Ross medical officers, Grenada. Dr. J. R. Forde becomes senior medical officer, Gold Coast; Dr. J. H. Pottinger senior medical officer, Palestine; Dr. A. M. W. Rae senior medical officer, Gambia; Dr. C. F. Deutrom superintendent and quarantine medical officer, Mandapam, Ceylon; and Dr. S. T. Gunasekera deputy director of medical and sanitary services, Ceylon.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

VOLUNTARY HOSPITALS

Prof. J. M. Munro Kerr, president of the Royal Faculty of Physicians and Surgeons of Glasgow, in an address on hospital development delivered last week, said that sooner or later voluntary hospitals would be faced with the problem of paying their surgical and medical staffs. Medical men as well as many members of the general public felt that it would be very unfortunate if the voluntary hospitals ceased to exist as entities. Hospital development was in a state of evolution, and it was difficult to foretell how the position of the voluntary hospitals and those under the control of local authorities would be affected. It appeared to many people that the only way by which the identity of the voluntary hospitals can be preserved is an expansion of the paying block system. The Victoria Infirmary was an example of successful development along these lines, and the Glasgow Royal Infirmary was embarking on a similar scheme. This would have the effect of removing the less efficient nursing-homes of which there are a great number. It was now difficult for young men to specialise because hospital appointments are unpaid, and Prof. Kerr had heard recently of promising young specialists who had been obliged to give up on account of this difficulty. In some hospitals two-thirds of the running costs were paid by the paying block, and he believed that the large voluntary hospitals could in this way be made almost self-supporting, while the physicians and surgeons would be satisfied with the arrangement. For the past 10 or 15 years many medical men had been trying to impress upon directors of voluntary hospitals that this would be their salvation. If the developments they advised were carried out, he thought that the voluntary hospitals would be in such a strong position that there would be no danger of the local health authorities taking control of them.

HOURS OF ASYLUM STAFF

The Fife Joint Asylum committee last week decided to recommend that the hours of duty of the staff at Springfield Asylum should be reduced to 48 per week. The application for a reduction in hours was made by the Mental Hospital and Institutional Workers' Union, and the report submitted showed that the staff at present have a 12-hour day and a 60-hour week. The proposed alteration was supported by the medical superintendent. The recommendation will entail an additional cost of nearly £3500 per annum, and the nurses' home will have to be extended. The £65,000 hospital extension scheme at the asylum has been agreed to, and at a meeting of the committee on May 8th it was decided to obtain competitive plans for the work.

THE MEDICAL CURRICULUM

LINES OF REFORM

TO-DAY appears the report of a conference which has met from time to time since December, 1932, to consider defects in the medical curriculum and ways in which they may be overcome.* Its authors begin by pointing out that despite its imperfections the present curriculum is capable of producing well-trained and efficient practitioners of medicine. Their preponderance, however, depends on inherent qualities as much as on training. The more intelligent student is never likely to be handicapped by the faults of a curriculum so much as his less gifted brother or sister. But the intention should be to give the student of average ability such knowledge and such education as will enable him to approach the problems of practice with some degree of confidence and put him in a position to learn from subsequent observation and experience. A scientific outlook, once acquired, will prove of more lasting value than a store of knowledge; at the same time it is impossible to inculcate general scientific principles without the introduction of many facts.

The conference has felt unable to recommend changes which would prolong the present minimum period of five years for a medical qualification. It has aimed instead at changes which will make it a continuous period of study, as little broken up by examinations as possible, affording the student time and opportunity for self-education in spite of the efforts he is called upon to make in memorisation. It is hoped that under this régime his memory may prove equal to its burden, and that by developing at all points fields of association his mind may acquire that kind of culture which survives the forgetting of facts.

Pre-medical Studies

The conference found that its dislike for early specialisation was shared by the scholastic profession. That a boy who has reached matriculation standard should spend his last two years at school almost wholly in the study of the natural sciences may not be undesirable, although it is important that the study of literature and languages should be continued up to the time of leaving. But it is a serious matter if intending medical students during their last two years are segregated in a small group, not only from the rest of the school, but even from other boys on the science side. The existence of "M.B. classes" at schools—small groups of boys who are engaged, not so much in the study of science, as in working through a prescribed syllabus in preparation for a series of small examinations—is a very unfortunate result of the present system. If all schoolboys and girls devoted a reasonable proportion of their time throughout the school period to the natural sciences there should be less need for a prolonged period of intensive preparation at the end of school life.

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* The members are Sir FARQUHAR BUZZARD, Dr. M. H. MACKEITH, and Mr. W. H. OGILVIE (representing the University of Oxford); Sir WALTER LANGDON-BROWN, Prof. H. R. DEAN and Dr. A. E. CLARK-KENNEDY (University of Cambridge); Dr. A. M. H. GRAY, Prof. G. E. GASK, Prof. C. A. LOVATT EVANS, and Prof. WINIFRED CULLIS (University of London); Lord DAWSON OF PENN, Sir RAYMOND CRAWFURD, and Sir EWEN MACLEAN (Royal College of Physicians of London); Sir HOLBURT WARING, Prof. WILLIAM WRIGHT, and Mr. E. L. PEARCE GOULD (Royal College of Surgeons of England); Mr. T. B. LAYTON (Society of Apothecaries of London); and Prof. W. W. JAMESON (London School of Hygiene and Tropical Medicine). Lord Dawson has acted as chairman, and Mr. G. W. Rossetti as secretary, while Sir Farquhar Buzzard has presided over the executive committee consisting of Prof. Gask, Dr. Clark-Kennedy, Prof. Dean, Prof. Lovatt Evans, Mr. Pearce Gould, Dr. Gray, Dr. MacKeith, Sir Ewen Maclean, and Prof. Wright.

the principles of general pathology, immunology, and bacteriology. This proposal is made not with a view to initiating the student into the problems of clinical medicine but to enable him to appreciate the relevancy of his laboratory observations and experiments to the structure and function of the living human body. At this stage the student should begin to practise the use of the stethoscope, ophthalmoscope, and otoscope, and should gain experience of the relation of "physical signs" to the normal structure and function of the organs of the body.

Anatomy.—The conference has devoted earnest attention to the large proportion of the student's time which is spent in the dissecting room, and has considered a suggestion that it is unnecessary for every student to dissect the whole body. On this important question unanimity has not been reached. On the other hand, it takes the view that while dissection is valuable as a training in technique and a discipline, it can with advantage be supplemented by the use of models, by radiography, and by other methods. The teacher of anatomy could save the student's time if he had the opportunity of demonstrating the anatomy of the abdomen and thorax in the post-mortem room, and he should also be given access to hospital material for teaching applied anatomy, with or without the assistance of a clinician attached to his department.

In the past, it is felt, too much time has been spent and too great a stress has been laid on the memorisation of structural detail for examination purposes. It is therefore recommended that the student's acquaintance with the details of each part immediately after its dissection should be established orally by his teachers before he is allowed to proceed to the next, but the retention in his memory of all such minutiæ should not be made the criterion of his fitness to pass on to hospital work.

Histology.—The idea prevalent in some medical schools that the object of histology is "to spot the organ" by a hasty glance down the microscope should be discouraged. The conference is of opinion that the student should have a practical knowledge of the more important methods by which material is prepared for microscopical examination, but thinks there is a tendency to spend too much time in the practice of technical details. The teaching of morbid histology would be made somewhat easier if during the teaching of normal histology the attention of the student were drawn from time to time to specimens illustrating the changes resulting from the reaction of tissues to chemical and physical influences.

Organic and Physical Chemistry.—The growing importance of a knowledge of chemistry in physiology, pathology, and medicine is universally recognised. Not only organic chemistry but physical and colloidal chemistry are essential for the medical student, and further instruction in chemistry is clearly necessary after passing the 1st M.B. The conference holds that the teaching in this subject should be determined by conference in which the teachers of physiology, biochemistry, and chemistry meet together, due weight being given to the opinions of the teacher of physiology on the special needs of students of medicine. A special examination in organic chemistry is unnecessary, but questions in organic and physical chemistry should be included in the pre-clinical examination in physiology and biochemistry.

Physiology.—It is now an increasing and commendable practice in medical schools to lay stress on the physiology of man. The significance of these lessons, however, is often not realised and the med student fails to recognise their import when h faced with their clinical applications. It is at stage that coöperation with the clinical staff n prove essential. The object to be aimed at is t the head of the physiology department should h access to patients or command the services of so member of the clinical staff to give appropri demonstrations. It should be made clear that student at this stage is not in this way to rece instruction in medicine but in physiology. should be shown patients, not as examples of disea however typical, but as examples of deranged fu tion, such as jaundice, œdema, cyanosis, breathle ness, or paralysis.

Pharmacology.—A knowledge of the physiologi action of drugs is of primary importance to t student, and the conference believes that a sh course of lectures and practical work on this subj is essential. While there should be no separ examination the candidate's knowledge should tested either by the inclusion of pharmacologi questions in the physiology paper and in the pra tical examination or by a viva-voce examinatio A knowledge of doses should not be required from student before he begins his clinical work, and the pre-clinical teaching of pharmacology the ther peutic applications should be omitted except in far as they are necessary to illustrate importa principles.

Pathology.—As already indicated, the stude should be introduced to the elements of gener pathology, immunology, and bacteriology durin the last two terms of the pre-clinical period. Th object of this is to bring home to him the basi processes underlying the disorders of structure an function with which he is shortly to be faced at th bedside. The scope of this instruction should, o course, be a matter of agreement between the patho logist and physiologist, whose fields might otherwis overlap.

Psychology.—A course of about eight lecture introductory to the psychological aspects of medicin should be given during the last two terms of th second year. Attendance should be obligatory, bu no examination should be held at this stage.

THE PRE-CLINICAL EXAMINATION

The pre-clinical examination at the end o the second year of the curriculum should tes the student's general knowledge of the structure and functions of the human body and his acquaintanc with the principles underlying simple reactions o its tissues to chemical and physical changes in thei environment. The conference has been impressed by the high proportion of failures in examinations in anatomy and physiology, and believes that their number could and should be reduced, not by lowering the standard but by altering the methods of teaching and examination. Knowledge of detail should be tested orally by the teacher before passing on to a new part of the work, and success in the pre-clinical examination should depend not on a mere feat of memory but rather on such grasp of the structure and function of the body as is a necessary equipment for hospital work. Since instruction in elementary general pathology is to be included in the pre-clinical period the student's knowledge of this subject should be tested in the examination. The board of examiners should represent anatomy, physiology, pathology, and pharmacology, and they should meet and coöperate in setting their questions.

Clinical Period

The supreme value of periods of clerking and dressing in the general wards remains unchallenged. It must be recognised, however, that medicine is becoming, and should become, more scientific and less empiric. The scientific standards and methods of thought inculcated in the pre-clinical years should be carried into the wards and applied at the bedside and in the laboratory. For this reason it is hoped that applied physiology and anatomy will be carried through the whole of the medical course, and also that pathology will be taught throughout the clinical period, in close association with all the branches of medicine, and not be regarded as a special study.

There is in all large hospitals a mass of clinical material ready to hand for the study of minor ailments and much of this passes in and out of the casualty and out-patient departments unused. In special departments such as those dealing with the diseases of the eye, the ear, the nose, the throat, and the skin, the student may, under proper guidance, absorb a large amount of useful information and experience if he is encouraged to do so. But he knows that there is little likelihood of his being confronted with an "eye case" or a "throat case" in his final examination and is often content to run the risk of exposing his ignorance in these directions. The remedy appears to lie in having representatives of the special departments on the board of examiners, and the fear of their expecting too much specialised knowledge from students need not be entertained if they examine in association with general physicians and surgeons. On the other hand, their coöperation would lead to the newly qualified practitioner being more familiar with the use of instruments, such as the ophthalmoscope and the laryngoscope, and with common disorders of the sense organs which will form a big part of his work in general practice. Much of the time now spent in watching major operations might be more profitably used in attending the casualty department.

The teaching of *preventive medicine* will be adequate only if its importance is realised by teachers throughout the whole curriculum. The professor of physiology will demonstrate the scientific basis of personal hygiene; the teacher of pathology will emphasise the advances which have come from bacteriological and immunological research; the clinician will find innumerable opportunities for instruction in preventive medicine; while obstetricians and pædiatricians must explain the practitioner's functions in relation to such matters as antenatal work, the conservative conduct of labour, the management of the puerperium, and the care of the child in its early years. In addition a short course in public health and State medicine, including forensic medicine, should be given, mainly by a member of the public health service selected for his ability to teach. (The syllabus of such a course is outlined.) It is suggested that some of the lectures might be given by an experienced insurance practitioner, and some by a man skilled in medico-legal work.

Medical psychology has already been introduced to the student. Now, during the clinical years, he must become familiar with the psychological aspects of patients in the hospital, and with this object demonstrations should be held at least once a fortnight throughout the period of in-patient clerking and in-patient dressing. In every ward there are many patients suitable for teaching of this kind, and in some schools such demonstrations have long been in force with great success. The physician or surgeon in charge of the ward may undertake them himself or may hand over that duty to a colleague attached to the hospital for the purpose of teaching medical psychology. In this way the teacher of medical psychology may be able to draw upon the material in the hospital as a whole for teaching purposes, and by selecting patients whose condition is not primarily one of mental disorder he can bring the psychological features of illness to the student's notice. Besides such instruction attendance should be required at not less than six demonstrations at a mental hospital, where the student can observe the general aspects of advanced insanity, and the working of an institution for the care of the insane and mentally defective.

In the final qualifying examination adequate knowledge of the psychological aspects of ill-health should be expected from the candidates and should be thoroughly tested, not only in written papers but in the clinical and oral parts of the examination.

Pathology must be taught with two objects in mind. First, to give the student such a grasp of its importance that he will come to think at the bedside instinctively in terms of pathology, and, secondly, to give him such an interest in the science of pathology that he is alert to follow its progress and ready to avail himself throughout his career of the advances in pathological theory and their application. To ensure the latter the student must attend set courses in pure pathology and spend enough time in laboratory work to learn something of its technique and experimental methods. To provide for the former he must throughout his clinical course renew his acquaintance with morbid processes as they are associated with physical signs. The conference is of opinion that the student will be helped to grasp the true importance of pathology and its bearing upon his practice if the examination in this subject —instead of being something separate, which can be passed and left behind—is made part of the final examination.

FINAL EXAMINATION

There is much to be said for a final examination in pathology, medicine, surgery, and obstetrics, the whole to be passed at one time. But experience has shown that few students are able to do themselves justice in so stern a test; and while it is very desirable to preserve the unity of pathology, medicine, and surgery by combining them in one examination, it is felt that obstetrics, gynæcology, and disorders of infancy might well be taken separately. Modern conditions of practice make the recently qualified practitioner a consultant in obstetrics, and for this reason it would in fact be a real advantage if the test of knowledge in this subject were made the last step in the whole curriculum. And to a certain extent the same may be said of public health and State medicine.

The conference therefore recommends that the final examination should consist of two parts:—

I. Medicine, Surgery, and Pathology.

II. Gynæcology, Obstetrics, and Pædiatrics; Public Health and State Medicine, including Forensic Medicine.

Both parts may be taken at the same time, or a candidate may enter for Part I. alone; but no one will be held to have passed Part II. until he has passed Part I. The examination will include a test of the student's knowledge of the physiological and therapeutic aspects of pharmacology (including toxicology).

The final examination, it is suggested, should be conducted by a board of examiners who are to meet and coöperate in setting questions so that the papers are reasonably balanced. The pass list should be prepared at a meeting of the board at which all are present. The examiners in Part I. might include representatives of: medicine, surgery, pathology, medical psychology, dermatology, ophthalmology, oto-rhino-laryngology, and orthopædic surgery (including manipulative surgery); and in Part II.: *obstetrics and gynæcology, pædiatrics and disorders* of infancy, and public health and State medicine (including forensic medicine). The conference is agreed that such a board would secure a better all-round education for the medical student, by a more thorough test of his knowledge of general medicine and surgery, without in any way adding to its difficulties. And incidentally it recommends that more time should be allowed for the clinical and viva-voce parts of the examination than is usually given at present.

Post-graduate Clinical Experience

The conference holds that a medical student after passing the final examination should spend at least *six months as a resident medical officer in an approved* hospital before entering on private practice. It hopes that in the near future the number of such posts available to recently qualified men and women may be sufficient to make a statutory obligation of this kind practicable.

CORRESPONDENCE

SERUM IN STREPTOCOCCAL FEVERS

To the Editor of THE LANCET

SIR,—For some years I have been advocating a much more cautious and conservative attitude with regard to the use of serum in streptococcal fevers. It was therefore with interest and approval that I read the important paper by Dr. Leonard Colebrook in the current issue of THE LANCET and your own commentary upon it. In the Guy's Hospital Reports (1931, lxxxi., 1) I wrote a paper with Dr. R. E. Smith on the Natural History, Prognosis, and Treatment of Streptococcal Fever, in which we came to the same conclusions as Dr. Colebrook, (*a*) on analysis of my own experience in hospital and private practice and during the war, and (*b*) on analysis of the cases of *streptococcal septicæmia treated* in Guy's Hospital over a period of ten years. The prolonged and indiscriminate employment of serum without checks or controls and without any sound proofs of efficacy ever being produced is only another example of the unsatisfactory and unscientific tendencies in the therapeutics of the last few decades.

The older physicians frequently preferred to study and learn the natural course of a disease before making claims on behalf of new remedies. We should to-day make much more steady progress if we would but take a lesson from them. The example of Gull in my own school who was at pains to report on a series of cases of rheumatic fever "treated with mint water" as an answer to those who made extravagant claims for their "cures" might well be more frequently followed. It is surely a reflection on our methods that we have continued for forty years to employ expensive preparations, capable of producing unpleasant symptoms and even of causing adverse effects at times, on the basis of entirely haphazard and uncorrelated clinical trials and without any collective investigation. It has been the same story with vaccine and endocrine therapy.

I am, Sir, yours faithfully,
JOHN A. RYLE.

London, W., May 11th.

THE PROBLEM OF DIPHTHERIA

To the Editor of THE LANCET

SIR,—All the points which Dr. Stallybrass has raised in his letters to THE LANCET of March 23rd and May 4th have been covered to the best of my ability in the criticised report itself and my letter in THE LANCET of April 13th. For example: (1) The extra *invasiveness of gravis* diphtheria bacilli is considered on page 37 of the report and in my last letter. (2) The weakness of the statistics which Dr. Stallybrass objects to is admitted in the letter and discussed on page 39 of the report. (3) The ratio of virulent to avirulent carriers, and the possible effect of immunisation on this ratio, is given on pages 45, 46, and 102. (4) The relative risk to the herd and individual of contracting diphtheria from cases and carriers is argued on page 100 of the report. Dr. Stallybrass is incorrect in stating that we used chocolate media to isolate diphtheria bacilli after immunising the school. This medium was only used to confirm the Leeds workers' observations; plain serum-agar was preferred by us and used both before and after the immunisation of Greenwich Hospital School in 1928.

I would not have trespassed further on your space, but on behalf of my colleagues I felt it only fair to try to correct the impression which is conveyed by Dr. Stallybrass's letters—to wit that the report contained irresponsible statements, which were made without full examination of the evidence which was available at the time it was produced. I feel horrified to think that anyone who took the trouble to read the *whole* report could imagine that the investigations in Greenwich Hospital School "constituted a crucial experiment." Almost ad nauseam the report was interspersed with cautions and examples against accepting the findings at this school as of general application everywhere else; for instances, among many others, see pages 46, 92, 100, and 127 of the report. I have ever distrusted "crucial experiments," especially in epidemiology, and as M. Greenwood has said, in better language than is at my command, of the type of reasoning which maintains that what happens in one environment will necessarily take place in another—"I do not know an uglier or more crippling fault in the statistical epidemiologist than to reason in such a way. It is almost, perhaps quite, as intellectually vicious as the *post hoc ergo propter hoc* of the unstatistically minded." In any case, should I have been guilty of this "crippling fault," Dr. Stallybrass is alongside me in the same boat, if he believes that the failure to discover a carrier among a "considerable number" of 200–300 children in one school sufficient justification for the inference that active immunisation will in general diminish carrier infection.

Finally, it is most interesting to learn that virulent carriers were probably as frequent among the Schick susceptibles as among the Schick immunes of a Liverpool institution, as this is another nail in the coffin of the dictum that the carrier of virulent diphtheria bacilli is always Schick negative—the dictum on which, as I stated in my letter of April 13th, the inference that active immunisation may increase the virulent carrier-rate largely depends. As Dr. Stallybrass says, on most points he and I are in complete agreement, but on the point in question we are probably both subconsciously biased and perhaps, therefore, both at fault. Of course, if so, our conscious mind would be unable to realise this, and hence we had better agree to differ as regards the effect of anti-diphtheria innoculations on the virulent carrier-rate. I am, Sir, yours faithfully,

SHELDON F. DUDLEY.

Medical Department, Admiralty, S.W., May 13th.

CONTINUOUS DRIP BLOOD TRANSFUSION

To the Editor of THE LANCET

SIR,—Dr. Garnett Sheldon expresses his hearty agreement with the open method of approach to the vein. While not disputing the possibility that this may be necessary in the continuous method described (of which I have no experience), I cannot but feel that this must be regarded as one of its most serious disadvantages. Many of the cases so treated must necessarily be in a position of needing a repetition of the operation, especially if it is to be of service in cases of severe aplastic anæmia. To deprive such a patient of his available veins one by one is the worst sort of policy. I have seen such patients rendered almost untransfusable by the process, and, until there is some evidence of permanent benefit from the continuous method, the "direct approach" should surely be discouraged.

Personally I can see no reason why an ordinary venepuncture needle should not be used—the more so as a rapid flow is not required—and I cannot agree that it is necessary to be an "expert" to insert one, even where the veins are small. In ordinary transfusions, at least, cutting down on the vein should be an emergency proceeding only. The Red Cross Society has wisely placed a ban on "direct approach" in the case of donors, and I cannot help feeling that persons unable to carry out a venipuncture should not be encouraged to attempt transfusions at all. I am, Sir, yours faithfully,

Grosvenor-street, W., May 8th. J. W. SHACKLE.

DISTRESS AND HEALTH

To the Editor of THE LANCET

SIR,—The annotation in your last issue hardly does justice to the White Paper Cmd. 4886. The investigators spent only 17 days on the inquiry. In this time they went to eight places, visited maternity and child welfare centres, schools, junior instruction centres, and homes of the people. They consulted eight categories of medical, educational, and social authorities, including 28 medical practitioners and 7 members of the staffs of voluntary hospitals. They examined over 700 toddlers, 935 school-children, 400 youths and girls at junior instruction centres, 159 women at antenatal clinics, 230 mothers of young children, and observed men attending a labour exchange. Few will dispute that their observations are based "not on exhaustive clinical examination," and that their conclusions should "be regarded as approximate rather than as of scientific accuracy;" few also will attach much significance to their findings.

The vital statistics of the area concerned, which the investigators quote, show a serious condition during the last five years, however much worse it may have been in the past. The infant mortality-rates of the areas given are some 30 per cent. above that of England and Wales. The death rates in Sunderland from bronchitis, pneumonia, and measles were 30, 70, and 300 per cent. respectively above those of England and Wales. The pulmonary tuberculosis death-rate in Sunderland for the age-group 15–24 years in the period 1931–33 was about 50 per cent. higher than in the period 1911–13. A similar increase has occurred in other areas where unemployment has been severe and prolonged, while during the same time the pulmonary tuberculosis death-rate of this age-group in England and Wales generally has fallen 20 per cent. for males and remained stationary for females.

To return to the clinical examination; the investigators learnt that no gross rickets was found among regular attenders at welfare centres. Had they prolonged their trip a few days they might have discovered another profound truth—that people who visit a dentist regularly rarely have neglected teeth. With the widespread knowledge of the treatment of rickets and the increased facilities available, few children are left to become badly deformed; but this does not exclude the occurrence of milder degrees of the disease, which are only detectable by thorough examination. What significance, then, can be attached either to the percentage of rickets detected in toddlers by the investigators' superficial examination, or to the incidence of "deformities due to rickets" among school-children? Numerous statements have been made to the effect that mild degrees of rickets are still very common. For example, the medical officer of health for Woolwich (not a poor or unhealthy borough) claimed that 30 per cent. of children attending the toddlers' clinic in 1933 were definitely rachitic. Dr. A. G. Hamilton, writing in THE LANCET on Feb. 2nd of this year, considered that rickets could be detected in not less than 50 per cent. of those who attend infant welfare centres. If these claims are correct they reveal a widespread incidence of a wholly preventable disease. The matter calls for investigation by the Ministry of Health. But such an investigation would involve something more than a 17-day campaign, and a cheap, if hollow, victory.

I am, Sir, yours faithfully,

Bishops Stortford, May 11th. JOHN MARRACK.

EFFECTS OF PITUITARY EXTRACTS ON BLOOD

To the Editor of THE LANCET

SIR,—In their stimulating contribution to your last issue (p. 1099) Prof. Dodds and his co-workers describe the remarkable effects of extracts of the posterior lobe of the pituitary on the blood of rabbits. It may be of additional interest to record the fact that alkaline extracts of the *anterior* pituitary also exercise a profound influence on hæmopoiesis in rabbits. Animals injected with such extracts over a period of a week or ten days invariably exhibit a marked hyperplasia of the bone-marrow at autopsy. Since this hyperplasia is somewhat similar in nature to that produced by thyroid medication, it would appear that in this instance the phenomenon is due to stimulation of the thyroid gland by the thyrotropic principle of the pituitary.

I am, Sir, yours faithfully,

Brentwood, May 14th. THOMAS D. POWER.

DR. STILL'S PRESENTATION PORTRAIT

To the Editor of THE LANCET

SIR,—Will you please allow me to say that the note in the Royal Academy catalogue in reference to Dr. Still's portrait is not intended to convey that it will hang in King's College Hospital. It is to be presented to Dr. Still, together with a list of subscribers to the fund, which is being kept open for a short time longer. All contributions, through the generosity of Mr. Gerald Kelly, R.A., the artist, are being devoted to the endowment of a cot in honour of Dr. Still. Contributions may still be addressed to the Treasurer of the Portrait Fund at this Hospital, and a list of subscribers will be presented to Dr. Still in due course.—I am, Sir, yours faithfully,

C. E. A. BEDWELL,
House Governor, King's College Hospital.
Denmark Hill, S.E., May 14th.

PREVENTION OF THE COMMON COLD

To the Editor of THE LANCET

SIR,—In your issue of April 13th (page 914) Dr. Ernest Ward says that there are a host of prophylactic measures, none of which can be relied upon for protection against the common cold. Has he ever tried thyroid for this purpose? I have never given thyroid simply for the prevention of colds, but its action in this respect has been observed when given for other purposes. The dosage has been calculated according to the pulse-rate, sometimes assisted by the patient's temperature. I was taking 2 grains a day and noticed that although I was attending patients with influenza (to which I have always been very susceptible) I have remained free from that complaint through several epidemics. Also I suffered from no severe cold during the winter —a most unusual occurrence. A man, aged 28, taking thyroid gr. ½ every day, suffered no severe cold all the winter—he usually has several feverish chills; he stated that a chronic nasal catarrh from which he suffers has greatly improved. A lady, aged 46, taking thyroid gr. 1 every night volunteered the statement that she had suffered much less from colds all the winter. A man, aged 48, taking grs. 2 of thyroid regularly has not called me in to attend him once during last winter; previously he has usually been incapacitated from his duties for about 10 days once or twice every winter with a catarrhal cold. And I could go on telling stories like this.

I am, Sir, yours faithfully,

May 13th. A LONDON G.P.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Unemployment Assistance: Local Authorities Grants

ON May 9th in the House of Commons Sir HILTON YOUNG, Minister of Health, moved the second reading of the Unemployment Assistance (Temporary Provisions) (No. 2) Bill. The proposal was to put local authorities as far as possible in the same position after March 1st as they would have been if March 1st had been retained as the appointed day under the Unemployment Act of 1934. In order to do that they must clearly estimate the local authorities' expenditure on the relief of the class in question, and they must ascertain what contribution they would have made to the board under the financial scheme of the original Bill. In order to safeguard the local authorities the Bill provided that the duration of the agreed basis was to be either until the second appointed day was actually determined or for a limited period of six months. The amount of expenditure of which local authorities were being relieved was £6,000,000 a year, while the amount of their contributions was only £2,000,000 a year, so that there was a positive benefit to the local authorities on this transaction of no less than £4,000,000 a year. Liverpool would get assistance equivalent to a 2*s.* 7½*d.* rate; Sunderland a 2*s.* rate; Merthyr Tydvil a 2*s.* 9*d* rate; and taking the country as a whole the equivalent of a 3½*d.* rate was the average assistance to all local authorities.—Mr. A. GREENWOOD moved the rejection of the Bill on the ground that it failed to give effect to the principle that the entire cost of maintaining unemployed persons who are not in receipt of unemployment benefit should be a national charge.—The motion for the rejection of the Bill was negatived by 152 votes to 49, and the Bill was read a second time.

Public Health Services in India

In the House of Commons on May 13th the Government of India Bill was further considered in Committee. Mr. H. WILLIAMS moved to omit public health and sanitation from the list of subjects to be dealt with by the provincial legislatures. After discussion this amendment was negatived by 216 votes to 31.

Voluntary Hospitals and Paying Patients

In the House of Lords on May 14th the Voluntary Hospitals (Paying Patients) Bill was considered in Committee.

Viscount GAGE (Lord-in-Waiting) explained that on the second reading the Government had expressed general sympathy with the objects of the Bill, but they felt that in granting new powers in an Act there ought to be careful provision that the original intentions of existing trusts were preserved. The Government felt that the safeguards in the Bill could and should be strengthened. They had been in close touch with representatives of the hospitals in all matters concerning amendments and, except in one particular, there had been agreement.

Lord MACMILLAN moved to amend paragraph (2) of Clause 2 (accommodation for and charges to paying patients) so that it would read that the committee of management might charge such patients for accommodation, treatment, and maintenance (including such medical and surgical attendance and treatment as was given by the resident staff of the hospital) in accordance with such scale of charges as might be specified in any order made by the Charity Commissioners. He said that the amendment was designed to meet the wishes of certain medical associations. It was felt that provision should be made for a tariff which would cover all the expenses incurred by the hospitals. The amendment had been moved, after consultation with the British Medical Association, to remove any ambiguity with regard to fees to be charged.

The amendment was agreed to.

Viscount GAGE moved a new clause making provision for patients able to make some but not full payment. He said that if such patients were admitted to the free wards of certain hospitals it was doubtful whether that could be done legally, and it could not be done under certain trusts. It was obviously desirable that the hospital accommodation should be available to such persons. The clause made it obligatory on the Charity Commissioners, unless they thought it would be unappropriate in the case of a particular hospital, to reserve a certain amount of accommodation for such persons. The amount to be reserved would vary with different hospitals. The scale of charges specified in an order would include charges fixed with a view to meeting the needs of patients who, though able to make some payment, were unable to pay charges sufficient to meet the full expense to the hospital.

The Earl of DUDLEY said that while he agreed with the necessity for the new clause he hoped that the Government realised that the cheaper beds, for instance the four-guinea beds for which Lord Gage was seeking to make ample provision, were largely carried by the more expensive or ten-guinea beds. If the Charity Commissioners restricted the number of the more expensive beds it would be impossible to maintain the four-guinea beds, and the hospitals would be driven to adopt a one-standard seven-guinea bed. He hoped it would be made quite plain that there was no intention to restrict the more expensive beds.

The clause was read a second time and added to the Bill.

Viscount GAGE moved a new clause containing provisions for the protection of existing trusts. He said that the first part of the clause which was agreed between the Government and the promoters indicated the conditions under which the Charity Commissioners might make an order allowing land belonging to hospitals to be used for erecting new wards or buildings for paying patients. It was provided that the use of the land was only to be authorised if the Commissioners were satisfied that it would not be required for the purposes for which the trusts were created until after the expiration of a substantial period. The second part of the clause was the only point on which the Government and the promoters had not been able to come to an agreement. As he understood it, the promoters thought that in certain cases it might be possible by rearrangement of the wards and minor structural alterations to provide extra accommodation within existing buildings for paying patients. They were quite ready to give safeguards to protect whatever number of poor patients' beds they might happen to have and to see that none of those poor patients should suffer in regard to space or treatment through this rearrangement. But they claimed that, providing no reduction of numbers was occasioned, they had the right to use the new accommodation for paying beds. The Government claimed that if by the rearrangement of certain buildings it was possible to provide additional beds the poorer class of patient had the right under most of the trusts to those extra beds, if the funds permitted. If any other form of wards could be devised to get over the difficulty the Government would consider it very carefully.

Lord MACMILLAN said he shared Lord Gage's satisfaction at the large measure of agreement which had been achieved in carrying through this very beneficial measure. He regretted that they were not entirely agreed. In regard to existing buildings, the clause was not really satisfactory. In many hospitals it would be possible by an internal arrangement at a relatively small expenditure to get additional space to accommodate a limited number of patients to whom charges could be made. It would not be possible to do that under the clause unless the hospital could show that it was short of funds, or that there was a shortage in demand for accommodation. Either or both of those things might be very difficult to prove in many instances.

Viscount HAILSHAM (Secretary of State for War) said that the Government agreed that where there were in existing buildings beds, these could not be diverted to other uses unless the conditions of the Bill were satisfied. Lord Macmillan and Lord Luke, however, wanted the Bill to allow the Charity Commissioners to say that where there were existing buildings, which had been erected by money provided for the express purpose of giving free medical or surgical help to the poor, these might be adapted to hold more beds than at present, and that the surplus beds might then be used for paying patients, notwithstanding the fact that there was money available to the hospital to use them as free beds and that there were poor people unable to pay anything who would like to avail themselves of those free beds. Those responsible for advising the Government took the view that where buildings had been provided for the very poor people who could pay nothing, and where there were very poor people who needed the help of the hospital and there was no room for them at present, if it were possible by arrangement of the existing building to provide extra accommodation, that accommodation was earmarked and devoted for the purpose for which the buildings were erected—the purpose of providing free help to the poor. Lord Macmillan, on the other hand, contended that if the rearrangement was achieved by money obtained from outside sources, then the extra accommodation so provided might be used for patients against whom a charge was to be made. This was a matter of principle and the Government did not feel it would be right to allow the extra beds in the existing buildings which were provided for the very poor to be used for any other purpose.

Lord LUKE said he hoped that before the Report stage the Government might find some form of wards which would meet the difficulty.

Viscount HAILSHAM said if the clause were allowed to pass in its present form the noble lord would not be prejudiced in any discussion which might take place between him and the Government on the matter.

The clause was agreed to, as was also an amendment by Lord Luke to the effect that the Bill should not apply to Scotland.

The Committee stage of the Bill was concluded.

HOUSE OF COMMONS

WEDNESDAY, MAY 8TH

Treatment of Disabled Pensioners

Mr. GUY asked the Minister of Pensions what was the future policy of his department with regard to the treatment of disabled pensioners; and whether it was intended that the existing hospital organisation would be continued permanently in its present form.—Major TRYON replied: It is the policy of the Ministry of Pensions to continue the existing practice of utilising those hospitals most suited to the interests of ex-Service patients for whom the Ministry is responsible. There is no intention of curtailing the special facilities provided by the Ministry except in so far as may prove to be justified by the natural decline in the medical work of the department.

Mansion House as Convalescent Home

Mr. LEONARD asked the Secretary of State for Scotland if he would give particulars of the large mansion house on the island of Raasay owned by the Department of Agriculture; how many rooms were in the house and whether they were furnished; how many acres of land were attached as policies and gardens ground; how long had these subjects been owned by the State; to whom were they now let; what was the total annual gross average receipts from these subjects, including sporting rental; what were the total annual average payments, including wages to gamekeepers, gardeners, rates, and general upkeep; and whether he would consider in future using this mansion house as a hostel, guest house, or holiday home for sick persons, and operated by approved societies, or otherwise.—Sir G. COLLINS replied: Raasay estate, including the mansion house, was acquired by the department at Candlemas, 1922. The house contains 45 rooms, with domestic offices, and is furnished. The garden and policies extend to about 15⅛ acres. The house is normally let along with the sporting rights, but has not yet been let for the coming season. The average annual gross receipts from lets in recent years amounted to approximately £310. The average annual expenditure on wages, rent, and general upkeep has been approximately £390. With regard to the last part of the question, although the house provides the only accommodation on the island for a tenant of the sporting subjects, I shall give consideration to any proposals submitted by approved societies for utilising the house in the manner indicated by the hon. Member.

Disease Carrier—Iver Heath

Mr. Groves asked the Minister of Health whether the order for the removal to hospital of the cattleman at Iver Heath was obtained by the medical officer of health from magistrates sitting in public or privately from one magistrate.—Sir Hilton Young replied: I understand that this order was issued by a single justice.

MONDAY, MAY 13TH

Ex-Service Men and Epilepsy

Mr. Hall-Caine asked the Minister of Pensions the number of applications made by ex-Service men for pensions in respect of epilepsy which they attributed to their war service, and in how many cases pensions had been granted.—Major Tryon replied: I have no record of the number of claims for pension that have been made in respect of epilepsy. The aggregate number of pensions that have been granted in respect of this disease is 8412.

Detention of Disease Carrier at Iver, Bucks

Sir Arnold Wilson asked the Minister of Health whether he was aware that W. Barrett, a cattleman at Dromenagh Farm, Iver, Bucks, had been detained since March 12th in the isolation hospital at Cippenham on the unsupported statement of a single medical officer that he was suffering from an infectious disease, though he was at that date, and was now, considered by another doctor to be free from any disease; and whether he would procure his immediate release without prejudice to any claim he might put forward for damages for illegal detention.—Mr. Shakespeare replied: My right hon. friend understands that the man referred to was not detained in the isolation hospital on the unsupported statement of a single medical officer, but that eight consecutive bacteriological examinations of swabs taken from his throat disclosed the presence of hæmolytic streptococci. My right hon. friend is informed that he was discharged from hospital as soon as bacteriological examination indicated that the organisms were no longer present.

Sir Arnold Wilson asked the Minister of Health whether his attention had been drawn to the statement at pages 96 to 98 of the Report on the Health of the Army for 1932, that no appreciable decrease in the total dysentery figures had occurred during the five years in which an extensive search for dysentery carriers had been in operation, and that routine investigation for carriers had been abandoned in view of the injustice entailed to individuals; and whether, in view of the fact that hæmolytic streptococci, which were the cause of the isolation of a cowman at Cippenham Isolation Hospital, were frequently found in healthy persons, he would institute inquiries with a view to preventing injustice to individuals in such cases.—Mr. Shakespeare replied: The answer to the first part of the question is in the affirmative, but my right hon. friend is advised that dysentery is not comparable with the streptococcal infections, and that the isolation of the man referred to in the second part of the question was, in the circumstances of the case, the proper course. He was isolated not merely because of the finding of certain organisms in his throat, but as a result of a combination of bacteriological findings and epidemiological evidence. My right hon. friend sees no necessity for special inquiries on this subject.

Soldier's Detention in Mental Hospital

Mr. Thorne asked the Secretary of State for Scotland if he could give the House any information in connexion with the case of John Mulholland, late private in the Highland Light Infantry, who was at present an inmate of the Lochgilphead Mental Hospital; whether any application had been received for the release of this man, who was stated to be sane; and what action he proposed to take in the matter.—Sir Godfrey Collins: I have made inquiry and find that Mr. John Mulholland has been an inmate of the Argyll and Bute District Asylum at Lochgilphead, under a sheriff's order, since Dec. 28th, 1934. When admitted he was suffering from epilepsy and mental confusion. No communication regarding his discharge has been received by the General Board of Control for Scotland. I am taking immediate steps to have further inquiries made into the circumstances of the case. In the meantime I may say that Mr. Mulholland's mental state and general health have considerably improved during his residence in the asylum.

TUESDAY, MAY 14TH

Medical Examinations of Army Officers

Captain Cunningham-Reid asked the Financial Secretary to the War Office (1) how many officers of the rank of colonel and of each rank of general officer had, during the past 12 months, been found not to be fit in all respects for active service; and how many of those so found unfit were still on full pay; and (2) whether all colonels and general officers had been medically examined during the past 12 months; and, if so, whether any reductions in the ages for compulsory retirement of colonels and the various ranks of general officers were contemplated as a result of these medical examinations.—Mr. Douglas Hacking replied: With the permission of my hon. and gallant friend, I will answer this question and No. 2 together. All general officers and colonels who are employed on full pay have been medically examined during the last 12 months. Four officers of these ranks were found by medical boards to be unfit, and only one of them remains on full pay. Officers found to be temporarily unfit are removed to the half-pay list when they have exhausted their sick leave or are pronounced permanently unfit for general service. No reductions in the ages for compulsory retirement of officers of these ranks are contemplated.

Reconditioning of Houses

Mr. Joel asked the Minister of Health whether the Government had ever considered the desirability of making a grant for the reconditioning of houses, both by local authorities and by private owners; and what were its views on this subject.—Mr. Shakespeare replied: Yes, Sir. The Government have given careful consideration to this question, and are of the opinion that the needs of the situation will be adequately met by the Housing (Rural Workers) Acts, 1926–1931, as proposed to be amended by the Housing Bill now before Parliament and by the general provisions of that Bill.

Imports of Processed Milk Products

Sir Percy Hurd asked the Minister of Agriculture whether, in view of the increased production of milk this summer and the greater output of condensed milk and dried milk in this country, the Government was taking further steps to check by quantitative restriction or tariffs the importations of processed milk products.—Mr. Elliot replied: The Governments of the foreign countries mainly concerned in the United Kingdom market with condensed milk, milk powder, and cream have been asked to arrange for certain additional reductions in supplies as from April 1st last, the reductions in each case being based on imports during the corresponding months of the year previous to the introduction of voluntary import regulation—namely, June, 1932, to May, 1933. Arrangements are also being made to secure reductions in imports of condensed whole milk, condensed skimmed milk, and cream from the Irish Free State. As my hon. friend will be aware, imports of processed milks from foreign countries are already subject to customs duties. It is understood that the interests concerned have under consideration an application to the Import Duties Advisory Committee for additional duties on condensed skimmed milk, condensed whole milk, and milk powder (the duty on cream has been conventionalised under the Anglo-Danish Trade Agreement which operates until June, 1936). If such an application is made, future policy will be considered in the light of any recommendations received from the Import Duties Advisory Committee. The following statement gives details of the reductions referred to above:

Condensed skimmed milk: 10 per cent. (making 40 per cent. in all) during the six months to Sept. 30th. Condensed whole milk: 5 per cent. (making 35 per cent. in all) during the quarter ending June 30th, and a further 5 per cent. during the quarter ending Sept. 30th. Milk powder: 5 per cent. (making 30 per cent. in all) during the quarter ending June 30th, and a further 5 per cent. during the quarter ending Sept. 30th. Cream: 5 per cent. (making 40 per cent. in all) during the quarter nding June 30th, and a further 5 per cent. in each of the quarters ending Sept. 30th and Dec. 31st.

Pensioners and Disseminated Sclerosis

Mr. HUTCHISON asked the Minister of Pensions whether ny pensions had been granted to applicants suffering from disseminated sclerosis attributed to war service; and, if so, whether he could give the numbers of such pensions.—Major TRYON replied: Pensions have been granted in a certain number of cases for the disease referred to, but I am unable to quote figures as they are not separately classified in the records of the Ministry.

MEDICAL NEWS

Royal College of Surgeons of England

At a meeting of the council of the college held on May 9th, with Sir Holburt Waring, the president, in the chair, Dr. W. T. Gordon Pugh and Mr. H. E. G. Boyle, members of 20 years' standing, were admitted to the fellowship.

Mr. C. Bowdler Henry was appointed as the representative of the college at the ninth international dental congress to be held in Vienna in August, 1936. Mr. G. C. Knight and Dr. D. Slome were reappointed Leverhulme scholars for a third year from July 1st. The president reported that he performed the opening of the new building of the Royal Australasian College of Surgeons in Melbourne on March 4th, and that he presented to Mr. E. S. J. King the certificate of the award to him of the Jacksonian prize for 1933. Diplomas of membership were granted to the following candidates in addition to those mentioned in our issues of May 4th and 11th:—

H. F. Anderson, Camb. and St. George's; Margaret Brodigan, Univ. Coll.; J. E. Elliott, Guy's Hosp.; and K. D. Gibson, Camb. and St. George's.

A diploma in gynæcology and obstetrics was granted jointly with the Royal College of Physicians, to Roland Hodgson Nattrass.

University of London

On May 20th and 27th, at University College Hospital medical school, at 5.15 P.M., Prof. Charles Singer is giving two further lectures on the history of medicine. On May 20th he will speak on recent additions to the history of syphilis, and on May 27th on medicine in America.

University of Glasgow

The Struthers gold medal and prize has been awarded to Dr. Thomas Nicol, lecturer in regional anatomy in the University.

University of Manchester

Dr. H. L. Sheehan, lecturer in pathology, has resigned his post on his appointment as director of the research department in the Glasgow Maternity Hospital.

International Association of Thalassotherapy

The seventh congress of this association will be held at San Sebastian from July 27th to 30th. The chief subjects of discussion will be the treatment of cervical adenitis, and the indications and contra-indications of sun-bathing. Information may be had from the organising committee, Asociación Internacional de Talasoterapia, Plaza del Buen Pastor, 20, San Sebastián, Guipúzcoa, Spain.

Lebanon Hospital for Mental Diseases

The thirty-sixth annual meeting of this hospital will be held at Friends House, Euston-road, London, N.W., on Monday, May 20th, at 4.30 P.M., when Lord Alness will be in the chair. The speakers will include Dr. Percy Smith.

Lincoln County Hospital

It is hoped to open the first of the new wards built under the extension scheme before the end of June. The number of patients is steadily increasing, and in the first three months of the year the hospital dealt with 300 emergencies and accident cases.

Chadwick Public Lectures

A lecture on educational and preventive physical exercises will be given on Thursday, May 23rd, at 5.30 P.M., at Manson House, 26, Portland-place, London, W., by Miss Noel Tidy, and Sir James Crichton-Browne, F.R.S., will preside. On June 6th, at the Chelsea Physic Garden, Swan Walk, Chelsea, Sir John Russell, F.R.S., will speak on modern changes in food production and their influence on our sources of supply. These lectures have been arranged by the Chadwick Trust, and the secretary may be addressed at 204, Abbey House, Westminster, S.W.1.

Royal College of Physicians of Edinburgh

A quarterly meeting of the College was held on May 7th with Dr. Edwin Bramwell, the president, in the chair. Dr. Alexander Hay Rintoul (Crieff) was elected a Fellow of the College. The Freeland Barbour fellowship was awarded to Mr. R. R. Goodall.

Royal Medico-Psychological Association

The ninety-fourth annual meeting of the association will be held from July 3rd to 5th, at 11, Chandos-street, London, W., and the guildhall of the Middlesex county council, Westminster, S.W. Visits have been arranged to Springfield Hospital and Shenley Hospital. The secretary is Dr. Reginald Worth, Springfield Mental Hospital, near Tooting, London, S.W. 17.

Royal Sanitary Institute

Immunisation in theory and practice, and housing with special reference to overcrowding, will be discussed at a sessional meeting of this institute to be held in the Town Hall, Carlisle, on Friday, May 24th. The first discussion will be introduced by Dr. J. Steven Faulds and Dr. J. C. B. Craig, and the second by Dr. Allan Semple, medical officer of health of Carlisle, and Mr. W. Hanson. Particulars may be had from Dr. Semple.

University of London Medical Graduates Society

The annual dinner of this society was held at the Langham Hotel on May 7th, Mr. McAdam Eccles presiding. Before grace, a message of loyal congratulation was sent to T.M. the King and Queen on the occasion of their Silver Jubilee. The toast of the society was proposed by the president, who announced a great increase in membership during the past year, and said he would be meeting London medical graduates at every port of call on his journey to and from Melbourne. Sir Charlton Briscoe responded in a humorous speech. The guests of the evening were the dean and the professorial staff of the British Postgraduate School at Hammersmith. In proposing their health, the president paid tribute in turn to the qualities of Col. Proctor, Prof. Fraser, Prof. Grey Turner, Prof. Young, and Prof. Kettle. Prof. Fraser, in replying, outlined the schemes proposed for the instruction of every type of medical graduate from home and abroad.

University of Sheffield

The council of the University has invited Dr. H. N. Green, at present lecturer in pathology in the University of Cambridge, to succeed Prof. Florey in the chair of pathology.

Dr. Green was educated at the University of Sheffield where he has the degrees of M.D. and M.Sc. Qualifying in 1924 he held several resident appointments at the Sheffield Royal Infirmary. On joining the pharmacological department under Prof. Edward Mellanby, he became interested in nutritional problems and was associated in Mellanby's work on calcification and on vitamin A in relation to infection. This led to a study of the vitamin A content of human liver in puerperal sepsis, reported in THE LANCET in 1932. Latterly Dr. Green has been demonstrator in pathology in the University of Cambridge, and his investigations of vitamin A deficiency have given rise to research into fat metabolism and serum esterase, a recent paper being concerned with changes induced by cancer and carcinogenetic agents.

Mr. A. C. W. Hutchinson, dean of the Edinburgh Dental Hospital and School, has been appointed professor of dental surgery; Dr. R. E. Pleasance, honorary lecturer in anæsthetics; and Dr. W. J. Clancy, honorary demonstrator in obstetrics. Dr. Dorothy Brown has resigned her post of lecturer in bacteriology; Dr. Percival Hay his post of lecturer in ophthalmology; and Dr. B. D. Pullinger her post of demonstrator in pathology.

Kent and Canterbury Hospital

The Duke of Kent has promised to lay the foundation-stone of this hospital on Friday, July 12th.

Sir Ernest Graham-Little has been elected for the ninth time in succession to represent medical graduates of Convocation upon the Senate of the University of London.

Dr. Lawson Gifford and Dr. T. J. Hallinan have been appointed members of the Legislative Council of the Island of Jamaica.

Bolingbroke Hospital

The rebuilding scheme of this hospital is to cost £70,000; that there is sometimes a waiting list of 250 for admission to the wards demonstrates its urgency. A sum of £10,000 has been collected, and King Edward's Hospital fund has promised £1000. The old mansion part of the building continues to deteriorate.

Ear, Nose, and Throat Congress in Vienna

The first congress of the Austrian otolaryngologists will be held in Vienna on June 21st and 22nd. Prof. M. Hajek (Vienna), Prof. G. Hofer (Graz), Prof. W. Krainz (Innsbruck), and Prof. H. Neumann (Vienna) will take the chair at the various sessions. The subjects of discussion will include vertigo, otogenic meningitis, postanginal complications, and new methods of speech training. The secretary of the congress is Ernst Urbant Schitsch, Wien, I., Schottenring 24.

Inter-State Post-Graduate Medical Association of North America

Some 30 members of this body are paying a visit to London at the end of May. Visits have been arranged for them to the Middlesex Hospital on Monday, May 27th, to Guy's Hospital on May 28th, and to St. Bartholomew's Hospital on the 29th. At this last meeting, which will take place in the afternoon, a special programme of clinical demonstrations has been arranged. Mr. Philip Franklin (27, Wimpole-street, W.1) is in charge of the clinical arrangements.

St. John's Hospital for Diseases of the Skin

New premises for out-patients are to be provided at Lisle-street, Leicester-square, and should be open by the end of the year. The landowners of the present out-patient department are prepared to allow the hospital the sum of £23,500 for the surrender of the lease of the building, leaving about £10,000 to be raised to prepare and equip the new department. The work of the electro-therapeutic department has been much extended.

Carnegie Grants for Medical Work

Eight Carnegie grants have been awarded to South Africa for 1935–36, and two of the recipients are medical men. Dr. D. L. Ferguson, medical officer of health for Port Elizabeth, will study the national and municipal control of food supplies, with especial reference to milk and pasteurisation, and the housing of the poorer classes, especially where two or more races are involved. Dr. C. C. P. Anning, M.O.H. for Pietermaritzburg, is to investigate the administration and practice of tuberculosis control, and the training of non-Europeans in hygiene and sanitation.

Mosquito Day

On Monday last Mosquito Day was celebrated by a luncheon in honour of Patrick Manson and Ronald Ross, held at the London School of Hygiene and Tropical Medicine. Since the amalgamation of the Ross Institute with the School it has been considered fitting that the name of Manson should be linked with that of Ross in holding what has been for some years an annual celebration, and the day will in future be May 13th. Sir Austen Chamberlain, chairman of the governors of the School, who presided, spoke of the foundation of the Institute and of the School, and of the work which both were doing in the control of malaria. He recalled that his father, Joseph Chamberlain, had sought out Manson to be his medical adviser at the Colonial Office. Sir George Newman, speaking as the oldest personal friend of Sir Ronald Ross present at the gathering, said he could name no other discovery of life-saving value which had been so promptly appreciated by the persons interested. It had been shown that the work of science could be translated both into the saving of lives and the economic production of rubber and tea.

Queen's University, Belfast

Colonel S. H. Browne, a graduate of the old Queen's College, Belfast, and formerly of the Indian Medical Service, has left a legacy of £10,000 to the University to found a scholarship for the promotion of medical research in the university. The amount and conditions of the awards will in due course be determined by the academic authorities.

New Hospital for Leek

The growing population of Leek is demanding a new hospital to relieve the pressure on the North Staffordshire Royal Infirmary. The weekly cost per occupied bed was £2 18*s.* 10*d.*, and the deficit on the hospital's general account is £532.

Derbyshire Royal Infirmary

The work of this hospital continues to increase; the daily average of beds occupied is 331, which is the highest on record. The wards are overcrowded, and it is hoped to begin on the new building scheme shortly. Mr. J. H. Thomas has given £1000 for the endowment of a bed to commemorate his silver jubilee as Member of Parliament for Derby.

Medical Prayer Union

The annual medical missionary breakfast of the union will be held at the Refectory, University College, Gower-street, on Wednesday, May 29th, at 8 A.M. The chair will be taken by Mr. W. McAdam Eccles, and an address given by Dr. Fredk. N. Green of the Church Missionary Society, Maseno, E. Africa. Those wishing to attend should notify the hon. secretary, Dr. Tom Jays, Livingstone College, Leyton, E.10.

Mount Vernon Hospital

Last year 673 persons were admitted to the wards but the hospital's activities are seriously handicapped by lack of money, and it will be impossible to increase the number of occupied beds until the radiological department has been enlarged and additional apparatus provided. This would cost £10,000, and another £10,000 is needed for maintenance. The income fails to meet expenditure by £5000.

International Society of Medical Hydrology

The annual meeting of this society will be held in Brussels from Oct. 12th to 17th. On Oct. 13th a discussion on the action of carbon dioxide baths on the peripheral circulation will be opened by Dr. E. Guilleaume and Dr. Marcel Wybauw (Belgium), Dr. P. N. Deschamps (France), and Prof. H. Vogt and Dr. R. Wachter (Germany), while on Oct. 14th Prof. Scherbakov (Jugoslavia), Prof. S. Pisani (Italy), and Prof. V. Mladejovsky (Czechoslovakia) will speak on the therapeutic action of muds. On the two following days a visit will be made to Luxembourg to inspect the establishments at Mondorf and Spa. On Oct. 17th a third medical discussion on therapeutic agencies of the sea coast will be held at Ostend, and papers will be read by Prof. I. Gunzburg (Belgium) and Dr. W. G. Willoughby (Great Britain). The secretary of the society may be addressed at 109, Kingsway, London, W.C.2.

Congress of Gastro-enterology

The first international congress of gastro-enterology is to be held in Brussels from August 8th to 11th, under the presidency of Dr. M. J. Schoemaker, of the Hague. The members will meet in sections of medicine, surgery, radiology, and pathology, and in addition there will be two general meetings, for discussion of gastritis and severe ulcerative colitis (non-amœbic). An international society of gastro-enterology will, it is hoped, be founded. The secretary-general of the congress is Dr. Georges Brohée, 64, Rue de la Concorde, Brussels. An English committee has been formed, with Sir William Hale-White and Dr. A. F. Hurst as honorary president and president respectively. The other members are Dr. Adolphe Abrahams, Dr. T. L. Hardy, Mr. John Morley, Dr. J. W. McNee, Dr. J. A. Ryle, Dr. C. K. Simpson, Sir Edmund Spriggs, Prof. W. W. D. Thomson, Mr. A. J. Walton, and Prof. D. P. D. Wilkie. Dr. Thomas Hunt (12, Queen Anne-street, London, W.) is the hon. secretary.

Medical Congresses in Brussels

The Journées Médicales de Bruxelles will be held this year from June 29th to July 3rd under the presidency of Dr. Edgard Zunz, professor of pharmacology of the faculty of medicine. The main subject of discussion is to be the physiopathology of the endocrine glands, and Prof. George Barger (Edinburgh) will be among the speakers. The secretary of the congress is Dr. R. Beckers, 141, rue Belliard, Brussels. As already announced, the meeting of the Belgian Society for Physical Education will also take place at the same time (June 30th to July 3rd).

From Sept. 12th–19th the Tomarkin foundation is arranging to hold its seventh international medical post-graduate congress in Brussels. The lecturers will include Sir Crisp English, U. Friedemann, J. Plesch, and W. Levinthal (London), C. Heymans (Ghent), A. S. Hyman (New York), J. Schwartzmann (Odessa), M. Ascoli (Palermo), C. Regaud, N. Fressinger, A. Besredka, C. Levaditi, and M. P. Weil (Paris), E. Loewenstein (Vienna), P. Ulenhüth (Freiburg), and A. J. D. Cameron (Tunbridge Wells). The secretary of the foundation may be addressed at the Faculty of Medicine, 97, Rue aux Laines, Brussels.

Fellowship of Medicine and Post-Graduate Medical Association

Courses will be given in gynæcology at the Chelsea Hospital from May 27th to June 8th; in chest diseases, City of London Hospital, Victoria Park, from May 27th to June 1st; in venereal disease, London Lock Hospital, from May 27th to June 22nd; in chest and heart diseases at the Victoria Park Hospital (6 P.M. on Wednesdays and Fridays) from June 5th to 28th; in chest diseases at the Brompton Hospital (at 5 P.M on two days a week) during June. There will also be a clinical and pathological course at the National Temperance Hospital at 8 P.M. Tuesdays and Thursdays, from June 11th to 28th. Week-end courses will be given as follows: obstetrics at the City of London Maternity Hospital, May 25th and 26th; fevers at the Park Hospital, Hither Green, June 15th and 16th. Other forthcoming courses include urology at St. Peter's Hospital, June 17th to 29th; medicine, surgery, and the specialties at the Prince of Wales Hospital, June 17th to 29th and July 1st to 13th; cardiology at the National Heart Hospital, June 24th to July 6th. Daily clinical instruction in various branches of medicine and surgery is available through a panel of teachers. A supper-dance and cabaret has been arranged to take place at Claridge's on Wednesday, June 5th, at 9.30 P.M. Tickets can be obtained from the Fellowship, 1, Wimpole-street, W. 1.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, May 21st.

Special Meeting of Fellows. 5 P.M. *General Meeting of Fellows,* 5.30 P.M.

Wednesday.

Comparative Medicine. 5 P.M. (Royal Army Medical College, Grosvenor-road, S.W.), Annual General Meeting. Demonstrations: G. R. Cameron and W. A. E. Karunaratne: Liver Changes in Exophthalmic Goitre. W. A. E. Karunaratne: Rhinosporidiosis in Man. C. L. Oakley: Tuberculosis in the Dog. E. S. Duthie: Mitochondria and Cell Survival. J. A. Boycott: Agglutination Reaction in Glandular Fever. G. H. Eagles: Spontaneous Encephalitis in the Monkey. Also demonstrations by E. L. Taylor, E. Klieneberger, J. R. M. Innes, J. A. Nicholson and J. Stewart, E. J. Pullinger, and A. W. Stableforth.

Thursday.

Urology. 8.30 P.M., Annual General Meeting. Discussion on the Scope and Indications for Renal Sympathectomy, to be opened by Mr. S. Harry Harris (Sydney).

Friday.

Disease in Children. 5 P.M., Annual General Meeting. Cases: Dr. Raymond Kirk (for Dr. G. Bray): 1. Urticaria Pigmentosa of the Nodular Type. Dr. John Gibbens: 2. Malignant Tumour of the Liver ? secondary to a Suprarenal Tumour. Dr. Branford Morgan: 3. Coarctation of Aorta, with unusual Radiological Shadow. Dr. R. Bailey (for Dr. D. Paterson): 4. Tumour of the Left Iliac Fossa.

Epidemiology and State Medicine. 8 P.M., Annual General Meeting. Dr. Gordon Pickles: Epidemiology in Country Practice.

MEDICO-LEGAL SOCIETY.

Thursday, May 23rd.—8.30 P.M. (11, Chandos-street, W.), Dr. T. H. Blench: A Police Surgeon's Problems.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.

Wednesday, May 22nd.—4.30 P.M., Clinical Cases.

CHELSEA CLINICAL SOCIETY.

Tuesday, May 21st.—8.30 P.M. (Hotel Rembrandt, Thurloe-place, S.W.), Dr. Millais Culpin: Sex Problems in Practice.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

Tuesday, May 21st.—5 P.M., Sir Edmund Spriggs: A Clinical Study of Headaches. (Last Croonian lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, May 20th, to Saturday, May 25th.—Maudsley Hospital, Denmark-hill, S.E. Afternoon course in psychological medicine.—St. John's Hospital, Leicester-square, W.C. Afternoon course in dermatology. (*Open to all.*)—Gordon Hospital, Vauxhall Bridge-road, S.E. All-day course in proctology.—City of London Maternity Hospital, City-road, E.C. Week-end course in obstetrics.—Courses arranged by the Fellowship are open only to members and associates.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

Monday, May 20th.—10 A.M., Medical and Surgical Wards, Genito-urinary Operations, Skin Clinic. 2 P.M., Gynæcological and Surgical Wards, Eye and Gynæcological Clinics.

Tuesday.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Nose, Throat, and Ear Clinic. 4.15 P.M., Dr. Redvers Ironside: Coma.

Wednesday.—10 A.M., Medical Wards, Children's Wards and Clinic. 2 P.M., Gynæcological Operations and Eye Clinic.

Thursday.—10 A.M., Neurological and Gynæcological Clinics. 12 noon, Fracture Demonstration. 2 P.M., Genito-urinary and Eye Clinics. 3.45 P.M., Venereal Diseases Clinic.

Friday.—10 A.M., Skin Clinic. Noon, Lecture on Treatment. 2 P.M., Throat, Nose, and Ear Clinic. 4.15 P.M., Mr. Roche: Urethral Stricture.

Saturday.—10 A.M., Medical Wards, Children's and Surgical Clinics.

Daily at 2 P.M., Operations, Medical and Surgical Clinics. The lectures at 4.15 P.M. are open to all medical practitioners without fee.

ST. MARY'S HOSPITAL, W.2.

Thursday, May 23rd.—5 P.M. (Institute of Pathology), Dr. C. H. Andrewes: The Cancer Problem: Some Fresh Clues.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

Monday, May 20th.—5 P.M., Dr. H. D. Haldin-Davis: Drug Eruptions.

Tuesday.—5 P.M., Dr. J. E. M. Wigley: Napkin Area Eruptions.

Thursday.—5 P.M., Dr. A. C. Roxburgh: Differential Diagnosis of some Common Skin Diseases.

Friday.—5 P.M., Dr. W. J. O'Donovan: Tuberculosis of the Skin.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Monday, May 20th, to Saturday, May 25th.—Intensive Clinical Course. (Second week.)

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

Thursday, May 23rd.—3 P.M., Dr. Douglas McAlpine: Demonstration.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.

Thursday, May 23rd.—2 P.M., Dr. B. E. Schlesinger: Endocrine Disorders. 3 P.M., Dr. D. N. Nabarro: Meningitis: (2) Treatment.

Out-patient clinics daily at 10 A.M. and ward visits (except Wednesday) at 2 P.M.

NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY.

Monday, May 20th.—5.30 P.M. (London School of Hygiene and Tropical Medicine, 1, Keppel-street, W.C.), Prof. M. Greenwood, F.R.S.: Temperaments, Physical and Psychological, in Modern Science.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.

Wednesday, May 22nd.—3 P.M., Dr. H. Crichton-Miller: Hysteria. 4.30 P.M., Dr. Cedric Shaw: Cardiovascular Syndromes.

ROYAL INFIRMARY, Manchester.

Tuesday, May 21st.—4.15 P.M., Dr. N. Kletz: On Constipation.

Friday.—4.15 P.M., Dr. J. Wharton: Demonstration of Ophthalmic Cases.

UNIVERSITY OF BIRMINGHAM.

Tuesday, May 21st.—3.30 P.M. (General Hospital), Mr. H. H. Sampson: Demonstration of Surgical Cases.

Wednesday.—3.30 P.M. (Anatomy Theatre, The University), Dr. Howard Co[illegible] ic Toxins.

Friday.—3.30 P.M. [illegible] T. S. Donovan: Fractures and [illegible]

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

Sunday, May 19th.—10.30 A.M. (Newcastle General Hospital), Dr. F. J. Nattrass: Medical Ward Visit.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

Wednesday, May 22nd.—4.15 P.M. (Royal Infirmary), Dr. David Smith: Medical Cases.

ROYAL INFIRMARY, Dundee.

Thursday, May 23rd.—3.15 P.M., Dr. J. Thomson: Diseases of Children, Clinical Cases. 4.15 P.M., Dr. W. L. Kinnear: Diseases of Children: the Treatment of some Pulmonary Affections.

Appointments

BLATCHLEY, DONALD, M.B. Edin., has been appointed Hon. Anæsthetist to the Hospital for Women, Soho-square.

CHAMINGS, A. J. WILSON, F.R.C.S. Eng., Hon. Laryngologist to the Woolwich and District War Memorial Hospital.

LESLIE, W., M.B. Lond., F.R.C.S. Eng., Senior Assistant Medical Officer (Grade I.) to St. Luke's Hospital, Chelsea.

ORD, J. W. E., M.D. McGill, Hon. Anæsthetist to the Willesden General Hospital.

PARKER, G. E., F.R.C.S. Eng., Surgical Registrar to the Woolwich and District War Memorial Hospital.

Middlesex County Council.—The following senior medical appointments at County hospitals are announced:—

BIRCH, C. A., M.D. Liverp., M.R.C.P. Lond., Senior Physician, North Middlesex;
GALLOWAY, R. L., M.B., F.R.C.S. Edin., Senior Surgeon, North Middlesex;
HUDSON, K. A., M.B. Sydney, M.C.O.G., Senior Obstetrician, North Middlesex;
JACKSON, E. B., M.D., M.R.C.P. Lond., Physician, Hillingdon;
JAMES, T. G. ILLTYD, M.Ch. Wales, F.R.C.S. Eng., Senior Surgeon, Central Middlesex;
JOULES, HORACE, M.D., M.R.C.P. Lond., Senior Physician, Central Middlesex;
NELSON, T. S., B.M. Oxon., F.R.C.P. Lond., Senior Physician; West Middlesex;
ROSSER, E. AP I., M.R.C.S. Eng., Obstetrician, Redhill.
STERN, D. M., M.B. Camb., F.R.C.S. Eng., Obstetrician, West Middlesex; and
WEBB, C. H. S., M.S. Lond., F.R.C.S. Eng., Senior Surgeon, West Middlesex.

Medical Referee under the Workmen's Compensation Act, 1925: Dr. R. C. **AITCHISON**, of Selkirk, for the Selkirk Sheriff Court District (Sheriffdom of Roxburgh, Berwick, and Selkirk).

Certifying Surgeons under the Factory and Workshop Acts: Dr. D. C. **PIM** (Abergavenny District, Monmouthshire).

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Two Hon. Clin. Tutors.
Acton Borough Education Committee.—Asst. School M.O., &c. £550.
All Saints' Hospital, Austral-street, S.E.—Res. H.S. At rate of £100.
Antrim C.C.—Chief Tuber. M.O. £750.
Barnsley, Beckett Ho [illegible] s. O. £250.
Barnstaple, North De [illegible] At rate of £150.
Bath, Royal United [illegible] ıd Cas. O. £150. Also Hon. Surg. for Ear, Nose, and Throat Dept., and Hon. Med. Reg.
Beckenham, Bethlem Royal Hospital, Monks Orchard.—Radiologist. 150 guineas.
Bedford County Hospital.—First and Second H.S. At rate of £155 and £150 respectively.
Birmingham, Selly Oak Hospital.—Res. Physician. £650.
Bolton Royal Infirmary.—Two H.S.'s. Each £125.
[illegible] *National Sanatorium for Consumption, &c.*—
[illegible] *Sanatorium.*—Asst Res. M.O. £175.
Brighton, New Sussex Hospital for Women, Windlesham-road.—H.P. £100.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £120.
Buxton, Devonshire Royal Hospital.—H.P. £200. Also Asst. H.P. At rate of £150.
Canterbury, Kent, and Canterbury Hospital.—Two H.S.'s. Each at rate of £125.
Cardiff, Welsh National School of Medicine.—Jun. Asst. in Medical Unit. £250.
Charing Cross Hospital, W.C.—Asst. Physician. Also Hon, First Asst. for Orthopædic Dept.
Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Coventry and Warwickshire Hospital.—H.S. for Aural and Ophth. Depts. At rate of £125.
Derbyshire Royal Infirmary.—Ophth. H.S. and Anæsthetist. £150.
Ealing Borough.—Asst. M.O. £450.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Clin. Asst. to Ear, Nose, and Throat Dept. Also H.P., three H.S.'s, and Obstet. Asst. Each at rate of £50.
Evelina Hospital for Sick Children, Southwark, S.E.—H.P. Also H.S. Each at rate of £120.
Golden-square, Throat, Nose, and Ear Hospital, W.—H.S. At rate of £100.
Grimsby Corporation Hospital.—Res. M.O. £350.
Hartlepools Hospital.—H.S. At rate of £150.
Hastings, Royal East Sussex Hospital.—Jun. H.S. At rate of £150.
Hertford County Hospital.—Sen. H.S. At rate of £200.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. for Dept. of Pathology. £350. Also Asst. Physician.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.
Hull Royal Infirmary.—Cas. O. At rate of £150.
Indian Medical Service.—Commissions.
Iraq Government.—Appointments. Each £100–£120 per mensem.
Jersey General Hospital and Poor Law Infirmary.—Res. M.O. £100–£200.
King George Hospital, Ilford.—Res. Surg. O. and Res. Asst. Surg. O. £300 and £250 respectively. Also Two H.P.'s and Three H.S.'s. Each at rate of £100.
Lancaster, County Mental Hospital.—Asst. M.O. £500.
Lincoln City.—Deputy M.O.H. £600.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool Royal Babies' Hospital.—Res. M.O. At rate of £90.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Second Asst. to Med. Supt. £200.
Liverpool [illegible] Reg. £50.
London [illegible] —Surg. Reg. £100.
London [illegible] en Travelling Studentship. £450.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester Ear Hospital.—Res. H.S. £120.
Manchester Royal Infirmary.—M.O. to Out-patients. £35.
Manchester, Withington Hospital and Institution.—Jun. Asst. M.O. At rate of £200.
Manchester and Salford Hospital for Skin Diseases, Quay-street.—Two Asst. M.O.'s. Each £100. Also H.S. At rate of £100.
Margaret-street Hospital for Consumption, W.—Hon. Dental Surgeon.
Margate, Royal Sea Bathing Hospital.—H.S. At rate of £200.
Middlesbrough, North Riding Infirmary.—Third H.S. £125.
Middlesex County Council.—Dist. M.O. £75. Also Public Vaccinator.
Miller General Hospital, Greenwich-road, S.E.—Out-patient Officer and Two Cas. O.'s. Each at rate of £150. Also H.P. and H.S. Each at rate of £100.
Newcastle-upon-Tyne Eye Hospital.—Jun. Res. H.S. £150.
Newcastle-upon-Tyne, Royal Victoria Infirmary, &c.—Temp. Asst. in [illegible] —£600.
North [illegible] *re Centre, Telford-road, W.*—M.
Norwic [illegible] Asst. School M.O. £500.
Notting [illegible] —Locum Tenens M.O. £7 7s. per week.
Oxford, [illegible] *spital.*—H.S. £100.
Padding [illegible] -Res. Med. Supt. £1100.
Plymou. [illegible] *Devonport.*—H.P. and Cas. O. At rate of £100. Also Res. Surg. and H.S. At rate of £200 and £120 respectively.
Queen Mary's Hospital for the East End, E.—Res. M.O. and Two Cas. O.'s. Each £150. Also Two H.S.'s., H.P., Obstet. H.S., and Res. Anæsthetist. Each £120.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.
Radium Institute, Riding House-street, W.—H.S. At rate of £150.
Reading, Royal Berkshire Hospital.—Hon. Asst. Surgeon. Also H.S. for Ophthalmic, &c., Dept. £125.
Rhondda U.D.C.—Sen. Asst. M.O. for Maternity and Child Welfare Work. £700. Also Temp. Asst. M.O. £10 per week.
Royal Chest Hospital, City-road, E.C.—Res. M.O. Also H.P. At rate of £150 and £100 respectively.
Royal Free Hospital, Gray's Inn-road, W.C.—First Asst. in Children's Dept. At rate of £115. Res. Cas. O. at rate of £150. Also First H.S. and Res. Anæsthetist.
Royal Northern Hospital, Holloway, N.—Radiologist. £580.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas O. £200. Also H.S. At rate of £100.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. At rate of £180.
St. George's Hospital, S.W.—Asst. Physician.
Sheffield, Jessop Hospital for Women.—Three H.S.'s. Each at rate of £100.
Sheffield Royal Hospital.—Clin. Asst. to Ear, Nose, and Throat Dept. £300.
Sheffield Royal Infirmary.—H.P. At rate of £80.
Sheffield Royal Infirmary a [illegible] Clin. Asst. £300. £500.
Sheffield University.—Asst [illegible] tal O.
Singapore, King Edward [illegible] and Lecturer in Dental Mechanics. $500 per mensem.
Southend-on-Sea General Hospital.—Med. Reg. £300. Surg. Reg. £250. Also H.S. to Orthopædic and Casualty Dept. At rate of £100.
South London Hospital for Women, Clapham Common, S.W.—H.P. and H.S. Each at rate of £100.
South Shields [illegible] —Sen. and Jun. H.S.'s. £200
[illegible] —H.S. £160.
[illegible] —H.S. At rate of £150.
Talgarth, South Wales Sanatorium.—Asst. Res. M.O. £200.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital, Gower-street, W.C.—Hon. Asst. Physician.
West End Hospital for Nervous Diseases, Regent's Park.—Hon. Anæsthetist.
West London Hospital, Hammersmith-road, W.—Chief Clin. Asst. in X Ray Dept. £125.
Weston-super-Mare General Hospital.—Res. H.P. £150.
Windsor, King Edward VII Hospital.—Res. M.O. £150.
Wolverhampton Royal Hospital.—H.S. At rate of £100.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E. H.P. and H.S. Each at rate of £100.
Worksop, Victoria Hospital.—Two Residents. At rate of £150 and £120 respectively.
York City.—Sen. Asst. School M.O. Also Asst. school M.O. Each £500. Also Temp. Asst. M.O. £500, and Temp. Res. M.O. £250.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Lowestoft, Suffolk; and Loughborough, Leicestershire.

NOTES, COMMENTS, AND ABSTRACTS

THE MEDICAL STUDENT ON HIS TRAINING

IN the council chamber of B.M.A. House fifty medical students from various London schools met on Tuesday evening, at the invitation of the U.C.H. Medical Society, to debate the motion: "The inadequacy of medical education lies in the curriculum." Participation in this debate was limited to unqualified students, but Sir Ernest Graham-Little was in the chair, and three deans occupied places in the front row and listened with bland appreciation to criticisms of their teaching programme. For them the sting was mitigated by the disclaimers on the part both of opener and opposer of the motion that while, on the motion, they must speak mainly of grievances they were not unappreciative of efforts made by deans and others. They admitted they were not well read in the principles of medical education, and not knowing what the future had in store for them their views must be largely conjectural.

With that preface, as the opener remarked, "we let ourselves loose and say what we like," and he started himself with an attack on the division of the six years' course into three years' pre-clinical and three years' clinical. Did not the student, he asked, learn incomparably more in the clinical years? It seemed to him futile to start on a wide if somewhat dilute scientific basis. Some preliminary education in elementary science was no doubt desirable, but why concentrate on the curious copulations of the earthworm; and was a particular knowledge of mechanics necessary in order to assemble axis-traction forceps? Normal anatomy and physiology were not of any interest to the medical man except as modified by disease. A pineal body that never went wrong could be ignored for medical practice, and he made a special plea for extension of the clinical years, as he believed diagnosis to be a matter of developed intuition. Speaking as a musician he could diagnose music where others could diagnose motor-cars, neither being able to say how. The skilful diagnostician, he contended, knows from the look of the thing just like any connoisseur. Get in contact early with clinical medicine was his message. A little access to the wards will give nodding acquaintance with a rather forbidding terminology, and help to make anatomy live in surgery and physiology in medicine.

His opposer opened by postulating the inadequacy of all medical education and began an analogy between teaching and digestion which ran like a streak all through the subsequent discussion. What was wrong was not the pabulum but the ability to assimilate it. If we regard our teachers, he said, as the liver ("some are definite gallstones") then examiners are the kidney, with a threshold at times too low for the attractive substances offered by examinees. A later speaker would have it that the student body was suffering from a surfeit of fat things which no amount of bile will help him to assimilate. The opposer found fault not with the curriculum but in turn with the student, the teacher, and the examiner. Many students start too young; they come to medical schools having been spoon-fed, and few know how to work. The teacher should teach the student how to think: he was too apt to teach medicine and surgery but not how to be a physician or surgeon. No change in the curriculum could teach a man to think. That lay in the rôle of teacher who alone could produce an attitude of mind.

All through the evening arose again and again this criticism of the teacher and the examiner. The examiner was not necessarily qualified to examine or to form a true estimate of a candidate's work. He would not care himself to sit for examination in subjects other than his own. The first remark heard by a student on entering the wards was often: "If you had said that in an examination you would be referred for six months." This kind of playing up to examinations was harmful. The G.M.C. in 1922 had added four more subjects to the curriculum, apart from the emphasis on the preventive aspect of medicine. All these were added at the expense of apprenticeship in medicine, making the student's life one constant rush. Why, asked one speaker, were only 50 unqualified students present at this discussion? The rest were carefully learning facts at home. "We learn too much and know too little," he said. "This cannot go on."

An outline was given of a curriculum in which three years were spent on the principles of medicine for an academic degree not qualifying for practice, followed by two years of clinical work in one or other of the main faculties, with a diploma at the end entitling to practise; but the house was fairly equally divided in its preference for such an ad-hoc education over one in which the scientific principle was at the back of the programme in every year, and the student at liberty, as in the French system, to refresh his knowledge of anatomy and physiology at any time. There was profound disagreement about the position of preventive medicine in the curriculum. One side held that it could have little or no place in the training of the general practitioner; health could only be assessed by a study of deviations from the normal. Equally strenuous was the view that medicine is nothing if not applied physiology, and that the curriculum must be enlarged to include genetics and the results of industrial and environmental disease.

Throughout the discussion there was rather a pointed feeling of dissatisfaction with the character of the teaching itself. It was, said one, a bad day for the student when teachers in hospitals were voluntary. The attitude of the part-time teacher was: "Well, I'm obliging you, anyway." Everything was to be said for the unit system and the full-time teacher; "you can tell him what you want." But the meeting ended on a note of hopelessness in the prospect of change. Only students are interested in the curriculum; they alone can be the moving force in any change. But being very young, tactless, amenable to economic stress, and required to behave, what chance had he as a reformer?

To this Sir Ernest, in closing the meeting, remarked that students really had far more influence than that. They had, he thought, taken their share in bring about the report on the medical curriculum to be presented to the senate of London University the following day. He wished them success. The voting then taken gave 33 for and 18 against the motion, but the value of the evening was rather as a symposium than as a discussion.

RECREATIONAL GYMNASTICS

THE work of Miss Elli Björkstén is having a great influence upon the school and recreational gymnastics of this country; her methods are an adaptation especially for women and children of the Swedish traditional school.

In Part I. of her book on the principles of gymnastics for women and girls the broader outlines and theory of educational gymnastics with accompanying formal exercises were given; in Part II.[1] original game exercises for ages 8–13 years are planned on the basis of a four years' school training, and are grouped according to the movement classification of a normal gymnastic table. In a stimulating introduction, Miss Björkstén defines her aim as "ease combined with form." She discusses the use and abuse of rhythm and music in connexion with gymnastics; these are aids that are helpful only when they are used with discretion. A scheme is set out for the normal school gymnastic table of movements upon which these game-exercises are based. The table itself is too elaborate to be fitted into the time allotted to gymnastics in most schools.

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[1] Principles of Gymnastics for Women and Girls. Part II. By Elli Björkstén, Senior Woman Teacher of Gymnastics at the University, Helsingfors. Translated by S. Kreuzer and G. H. Wicksteed. London: J. and A. Churchill Ltd. 1934. Pp. 591. 21s.

The fundamental standing position, rest, marching, and running, are then analysed with insistence upon lightness and elasticity as essential to the proper performance of all exercises. The rest of the work is devoted to the imaginative presentation of movements. For instance, "arm circling" is called the "small windmill"; a foot movement is pictured as "ski-ing down a steep hill"; various positions are named "the scarecrow," "the crane," "the chimney sweep"; and movements are given such suggestive titles as "Indians escaping in canoes," "Cossacks on horseback," and so forth. For fourth-year students jumps and elementary apparatus work are described in a more straightforward manner.

Teachers alert to find means of varying and adapting the presentation of their work to small children will find this book useful, and those whose duty it is to supervise remedial exercises may be stimulated to invent appropriate play exercises on the same lines. Backward and defective children especially need the imaginative and mental stimulus this type of teaching gives, and there is but little technical literature available on the subject of their physical training. It is unlikely that any teacher would care to follow the whole book; many will find in it stimulating ideas which will help them to enliven their class-work.

SANDOZ PRODUCTS

A PAMPHLET, published by J. Flint, Sandoz Products (134, Wigmore-street, London), sets out recent views on the use of calcium in inflammatory processes. The essay divides the indications for calcium therapy into those directed towards remineralisation in condition of calcium deficiency and those where transmineralisation is sought, the insoluble salt not being deposited as an inactive body but developing on its way through the organism. The effects of transmineralisation, using calcium in therapeutic doses, are set out in detail and elaborately documented; over 150 authors are cited in the pamphlet, and the large number of references make the value of experimental evidence clear to the reader.

The practical application of calcium therapy will, it is claimed, be greatly assisted by the use of preparations coming from the Sandoz Research Laboratories. Calcium-Sandoz is an organic calcium salt, an oxidation product of glucose, which is completely utilised by the organism, thus providing the maximum therapeutic action of the salt. It contains 9 per cent. of calcium. It is supplied in powder for oral administration and in tablets flavoured with chocolate or effervescent. Ampoules of 10 per cent. and 20 per cent. sterile solutions are suggested for intravenous and intramuscular injection. *Evidence is produced* that Calcium-Sandoz intramuscularly is painless and non-irritating, while intravenously it is better tolerated than the chloride. An interesting section of the pamphlet treats of the use of calcium in skin diseases, and allusion is made to the good results obtained by Trenk in a clinic at Munich which followed the use of Calcibronat in eczema, urticaria, pruritus, and varicose ulcers, the effect being particularly striking in urticaria. Calcibronat is a new organic salt, Ca-Br-Lactobionate $(C_{12}H_{21}O_{12})_2.Ca.CaBr_2+6H_2O$. and is designed to combine the sedative properties of a bromine-ion with Calcium-Sandoz.

A VERY GENERAL QUERY

A SUBSCRIBER writes to us in the following terms: "I shall be glad to hear from any subscribers who have had any reason whatever for being dissatisfied with any dealings involving time payments, or

in connexion with a publication." The writer the letter has discussed the situation with us hopes to get into touch with others who have recei unsatisfactory treatment from a particular fi Replies can be addressed to G.P., THE LANCET Off 7, Adam-street, Adelphi, W.C.2.

MICROSCOPES AND ACCESSORIES.—A catalogue reached us from Messrs. W. Watson and Sons, L London, describing instruments, optical compone and accessories manufactured by them. It encouraging to note in this thirty-fifth edition more attention is now being paid, by one of oldest makers of microscopes in England, to consistent production of high-grade apparatus. has not always been the position; English mal could often produce good microscopes, but t did not do so always and with certainty. Mod machine-tool methods are no doubt largely respons for the improvement, but unless these are accompa by stringent tests the results might still be irregu Messrs. Watson have evidently realised the importa of this with the result that their standard is both higher and more uniform. Practically ev application of the microscope in industry or scien research has been considered, and the informat contained in the catalogue will be of ser particularly to the novice.

Births, Marriages, and Deaths

BIRTHS

ATKINSON.—On May 6th, at Melton Mowbray, the wife M. W. Atkinson, M.R.C.S. Eng., of a daughter.

COOPER.—On May 6th, at Stafford, the wife of Thomas Valen Cooper, M.B. Lond., of a daughter.

GREGOR.—On May 8th, at Coventry, the wife of W. M.B. Aberd., of a son.

JAMES.—On April 30th, at Stoke Bishop, Bristol, of J. Angell James, M.D. Lond., F.R.C.S. En daughter.

MATTHEWS.—On May 7th, at Cowfold, Sussex, the T. E. Matthews, M.R.C.S. Eng., of a daughter.

QUINN.—On May 2nd, in London, the wife of Surg. Lt F. B. Quinn, M.B. N.U.I., Royal Navy, of a dau

SERGEANT.—On May 8th, a Hilton Sergeant, M.B.

STEPHENS.—On April 30th, Eng., of Ferguson-aven

MARRIAGES

BAMFORD—LEEMING.—On April 25th, at St. Cheltenham, J. Brian Bamford, of Ely, formerly of Kent, to Eileen Mary, daughter of Dr. Arnold of Cheltenham.

FYSH—CUMMINS.—On May 8th, at Maidenhead, Mark Fysh, M.R.C.S. Eng., to Eileen Alice, on the late Samuel Cummins and Mrs. Cummins Ireland.

MORRIS—MACDONNELL.—On April 27th, Lawre M.R.C.S. Eng., to Mai MacDonnell.

PIPER—HALL.—On May 11th, at the Parish C Middlesex, John Wesley Piper, M.R.C.S. E Mary Hall, only daughter of Mr. R. T. Hall

READING—SEERY.—On April 27th, at the Chur of Victories, Kensington, Philip Readi F.R.C.S. Eng., to Kathleen, eldest daug Patrick Seery and of Mrs. Seery, of Mulling

SEMON—PILCHER.—On May 2nd, at All Souls' Ch place, Henry C. Semon, M.D. Oxon., to Marjorie, eldest daughter of Captain Mansfield-street, W.

DEATHS

CONSIDINE.—On May 4th, suddenly, at Kill Co. Dublin, Thomas Ivoy Considine, F.R

JENNINGS.—On April 30th, at Southsea, Jennings, C.B.E., M.D., late A.M.S.

JEREMY.—On May 1st, at Colehill, Wimbor Jeremy, O.B.E., M.B. R.U.I., L.S.A., officer at the Memorial Hospital, Ludhiana.

MUSSEN.—On May 8th, at Chichester, William Mu Edin., late of St. Helens, Isle of Wight, aged

QUINTON.—On April 29th, at Winchester, Quinton, Surgeon-Captain, R.N. (retd.), seco late Dr. R. F. Quinton and of Mrs. Quint Winchester, aged 46 years.

SCHILLING.—On May 8th, very suddenly, at near Lowestoft, George Schilling, L.M.S.S. his 69th year.

WESLEY.—On May 6th, at Nottingham, Frank Willi O.B.E. (Mil.), M.D. Lond., late Act. Major, B.E.F., aged 65.

N.B.—A fee of 7s. 6d. is charged for the insertion of

ADDRESSES AND ORIGINAL ARTICLES

BIOCHEMICAL BASIS OF THYROID FUNCTION*

By C. R. Harington, M.A., Ph.D., F.R.S.
PROFESSOR OF PATHOLOGICAL CHEMISTRY IN THE UNIVERSITY OF LONDON AT UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

I

It is scarcely possible to give a connected account of the present state of knowledge concerning the biochemistry of the thyroid gland without paying some attention to the historical development of the subject; since this development is not without its own intrinsic interest I shall devote a part of the first of my two lectures to a consideration of its more prominent features. Although, as will be seen, the problems connected with the thyroid which remain unsolved are numerous and important, the advance of knowledge even to its present stage affords a striking example of the manner in which independent lines of research by medical men, physiologists, and chemists may ultimately converge nd in so doing may contribute to the solution of a iological problem.

The lines of development which I should like to in outline are those of views on the function f the normal thyroid gland and of ideas which have een held concerning the abnormalities of the gland volved in endemic goitre and cretinism, diseases h until recent years have been of great tance.

Early Theories of Thyroid Function

he first anatomical description of the thyroid iven by Wharton in 1656 and the physical eristics of the organ suggested to this author possibilities as to its function. The most distinguishing feature of the thyroid is the e of the peculiar viscous fluid or colloid with the follicles of the gland are filled; this nce was regarded by Wharton as a lubricant trachea to which it was supposedly conveyed h special ducts. A second point which struck n was that the gland was generally of a larger women; in the female sex in particular he regarded it as fulfilling a cosmetic giving grace to the contour of the neck. r date observers became impressed with beral blood-supply of the *thyroid*, and of this led to a theory which held the e time—namely, that the thyroid acted r shunt and thus regulated the supply the brain. Here again the larger size in women was adduced in support of it, for Rush of New York wrote in provision was necessary to guard the from the influence of the more numerous tation and vexation of mind to which sed than the male sex." An amusing ingenious suggestion of Rush was made ter (1820). "If," he says, "it were that the thyroid contains more blood mes than at others, this effect would be the naked eye; in this case women would have long ceased to go about with bare husbands would have learnt to recognise the swelling of this gland as a danger signal of threatening trouble from their better halves."

From time to time other suggestions with regard to the thyroid were advanced, as for instance that it was the organ of sleep and that it was essential for normal voice production, but all these hypotheses fell to the ground sooner or later for lack of objective support, with the result that as lately as fifty years ago the general belief of physiologists was that the thyroid, in the adult at least, performed no essential function whatever. The evidence which was needed finally to change this conception and to lay the foundations of modern knowledge of the thyroid came not from the physiologists, but from the medical men who had to deal with pathological conditions of the gland.

Essential Nature of the Thyroid

Goitre as an endemic disease had been recognised from very early times; mention of it occurs in the writings of Pliny and it is discussed by all the mediæval medical writers. As the name indicates goitre was first regarded merely as a swelling of the throat, but when the thyroid became recognised it was realised that it was this organ which was specifically affected in the disease. It was also gradually realised that endemic goitre was intimately associated in some way with the form of congenital idiocy which was known as cretinism.

In districts where goitre was endemic a very large proportion of the population was affected; in these regions the swelling of the neck came to be regarded as the normal state of affairs, and indeed there exist accounts of communities where there was rivalry between the inhabitants in the matter of the size and shape of their goitres and where visitors with normal necks were looked upon with pity as being deficient in one of the natural adornments of the human body. Whatever the cosmetic value of a goitre might be, however, there was no doubt that if the swelling reached an excessive size considerable discomfort and injury to health ensued; therapeutic measures had therefore to be devised to deal with the condition. I shall have occasion later to refer to the early medical treatment of the disease; at the moment I am concerned with the development of the technique for surgical removal of the swelling.

The usual surgical practice was to remove a part only of the goitre, but in some cases, where the pressure symptoms were very severe, total goitrectomy was effected, and it is to the careful study of a series of such cases published by Kocher in 1883 that we owe the first proof that the thyroid is indeed an essential organ. Kocher observed that whilst total goitrectomy effected, as was to be expected, a marked immediate improvement in the condition of his patients, their subsequent history was unsatisfactory. Some months after the operation a definite set of pathological symptoms began to appear; the skin became dry and thickened, the hair began to fall out, and the mental processes grew dull; in Kocher's own words the patients became "cretinartig"; they appeared to be relapsing into a condition analogous with that of the congenital idiots already mentioned as occurring frequently in areas of endemic goitre.

About ten years earlier there had been described by Gull a curious condition in middle-aged women which was characterised by a set of symptoms very similar to those which appeared in Kocher's patients; this condition was named by Ord (1878) myxœdema

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Oliver-Sharpey lectures for 1935, delivered before the llege of Physicians of London on March 26th and 28th. ct. will appear in a forthcoming issue.

and was definitely associated by him with atrophy of the thyroid gland. The brothers Reverdin (1883), who confirmed the observations of Kocher on the effects of total goitrectomy, noted the similarity of the post-operative condition of their patients with that of sufferers from myxœdema. It was also observed that removal of the thyroid from animals (especially young animals) produced certain changes which whilst not entirely similar to those present in human myxœdema were clearly analogous therewith.

The observations that the thyroid was an essential organ in man and animals and that its atrophy in the human being caused a definite disease led naturally to experiments on the treatment of this disease by a method of replacement. Schiff (1884) had obtained some evidence that the effects of thyroidectomy in animals could be relieved by grafting thyroid tissue and the first attempts to treat human myxœdema were made by this method (Bettencourt and Serrano, 1890); no permanent success was attained since the grafted tissue failed to establish itself, but the period during which it was being absorbed was characterised by relief of the symptoms. Making the logical deduction from this observation Murray in 1891 attempted to treat a myxœdematous patient with continued injections of a simple glycerol extract of sheep's thyroid and was immediately successful; shortly afterwards it was found that the thyroid could be given equally well by mouth and the replacement therapy of myxœdema thus became established on a firm basis.

The actual nature of the essential function of the thyroid was obscured for some time by the effects of removal of the parathyroid glands; these were not recognised at this date as independent entities and tetany resulting from their removal was often an accidental accompaniment of thyroidectomy, particularly in carnivorous animals. The success of the replacement therapy however at least provided the final proof that the thyroid exercised its function through the medium of an internal secretion.

Soon after replacement therapy had become established it was observed that administration of large amounts of thyroid resulted in great increase in nitrogenous excretion, whilst there was diminished nitrogenous excretion in myxœdema; it was further shown by Magnus Levy (1895, 1897) that the total gaseous exchange, which is an accurate index of the total metabolism, was increased in thyroid intoxication and diminished in myxœdema. It therefore became apparent that the principal function of the thyroid was to control the metabolic rate of the body as a whole, and this generalisation still covers all the diverse physiological effects of the thyroid which have since been described except those which affect its relationships with other organs of internal secretion.

Iodine Therapy in Simple Goitre

Endemic goitre was known from ancient times to be confined to certain regions—usually mountainous districts relatively far removed from the sea. As exploration was extended it was realised that the disease was world-wide in distribution, but the general impression of the sort of regions in which it was likely to occur remained unchanged. Although many bizarre theories were advanced from time to time regarding the ætiology of the disease, the prevailing view was that the cause lay in environmental factors and most probably in some abnormality of the water.

Apart from the surgical measures which have already been mentioned the principal method of treatment of goitre was by the administration of burnt sponge. The earliest reference to this treatment which I have been able to find occurs in the writings of Arnaldus Villanovanus (c. A.D. 1280); thereafter it recurs constantly in the works of the mediæval European physicians. Curiously enough no reference to the burnt sponge treatment appears in medical works in this country until quite recent times. The method was however practised in England in the form of the "Coventry treatment for bronchocœle," a secret remedy in the possession of a family of chemists at Coventry. After this remedy had long been a source of considerable profit to its proprietors, its nature was ultimately divulged to Dr. B. Wilmer, who published an account of it in 1779; its value was apparently accepted, since Wilmer's account appears almost verbatim in Black's "Medical Dictionary" (1800).

Now in 1812 iodine was discovered accidentally by the saltpetre manufacturer Courtois in the ash of burnt seaweed, and in the next year was identified as an element by Gay Lussac; a few years later it was isolated from the sponge (Fyfe, 1819). About this time there was working in Geneva, where endemic goitre was very severe, a physician by the name of Coindet. Having heard of the discovery of iodine and bearing in mind the traditional goitre remedy of sponge ash, Coindet, although in ignorance of the actual isolation of iodine from sponge, made the inspired guess that the newly discovered element might be the active principle of the traditional remedy.

The success which attended the first tests which Coindet (1820) made of his theory was dramatic; large goitres of long standing disappeared with incredible speed in response to administration of iodine, and the enthusiasm aroused by the success was such that people took to carrying little bottles of the magic element hung round their necks like charms. This excessive enthusiasm had a most unfortunate effect, for the incautious administration of too large amounts of iodine led in not a few cases to the production of a severe form of hyperthyroidism which was much more dangerous to the patient than the original goitre, and the iodine treatment thus fell into disrepute.

The early success however had left its mark and led logically to the development of the idea that endemic goitre might be due to environmental deficiency of the element, the administration of which had such a dramatic effect on the disease. About the middle of the last century an extensive investigation on these lines was undertaken in France by Chatin (1850–1860), who demonstrated quite clearly that a relationship did in fact exist between environmental deficiency of iodine (chiefly as indicated by the low iodine content of the water) and the occurrence of endemic goitre. Chatin's results were not accepted by the French Academy, and his work therefore failed to make much impression at the time; it has however been amply confirmed by subsequent investigations in different parts of the world, particularly by McClendon in America and by von Fellenberg in Switzerland, and in view of the technical difficulties under which he laboured it is deserving of the greatest credit.

Iodine in the Thyroid

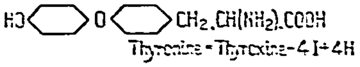
The connexion which various lines of works had clearly shown to exist between iodine and the normal functioning of the thyroid led that most able worker Kocher to postulate the existence of iodine in the gland itself, and it was at his suggestion that a search for iodine in the thyroid was instituted. This search was crowned with success in 1895 when Baumann demonstrated the presence of iodine in the ash resulting from alkaline incineration of a hydrolysis product of thyroid gland. Moreover, not only was Baumann able to show that iodine was present, but he found also that the amount of it bore some sort of relationship to the physiological activity of the gland as tested in replacement therapy; there was therefore a strong indication that the iodine actually belonged to the active principle.

It was soon found by Baumann that the iodine of the thyroid was practically confined to the colloid and that it was present in some sort of organic combination. From the colloid there could be prepared a characteristic protein, thyroglobulin (Oswald, 1901), which contained most of the iodine, and by gentle acid hydrolysis of this protein or of the crude colloid a certain concentration both of iodine and of physiological activity could be effected, products being obtained which under the best conditions contained 10–15 per cent. of iodine. No thorough purification could be effected by acid hydrolysis however, nor was enzymic digestion of thyroglobulin any more successful; the first real progress came when the method of alkaline hydrolysis was systematically studied. In 1914 Kendall succeeded, by hydrolysis of thyroid glands with 5 per cent. sodium hydroxide followed by a long and complicated process of fractionation, in isolating a minute yield of a crystalline compound containing 65 per cent. of iodine which he named thyroxine and which exhibited, qualitatively at least, all the physiological properties of the thyroid (Kendall, 1919).

Chemistry of Thyroxine

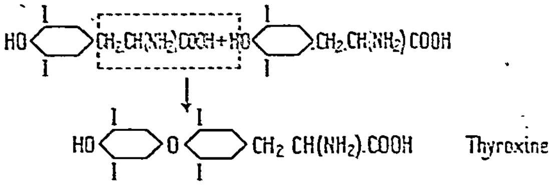
Progress with the chemistry of thyroxine was necessarily delayed until a more economical mode of isolation could be devised; this was eventually achieved in the form of a graduated hydrolysis with baryta (Harington, 1926[1]) by means of which there could be obtained from a good sample of dried thyroid somewhat over 0·1 per cent. of pure thyroxine. With the larger supplies of thyroxine which thus became available work on its constitution could be seriously undertaken. Removal of the iodine from thyroxine by a method which was known to involve no secondary alterations in the molecule gave a compound which was a phenolic amino-acid evidently related in some way to tyrosine. Systematic degradation of this product (thyronine) showed in fact that it was the *p*-hydroxyphenylether of tyrosine (Harington, 1926[2]). It is a matter of some interest that thyroxine is the first natural product in which the phenylether linkage has been found to occur (Fig. 1). Thyroxine was thus proved to be a tetra-iodo derivative of thyronine, but the positions occupied by the iodine atoms remained uncertain.

FIG. 1



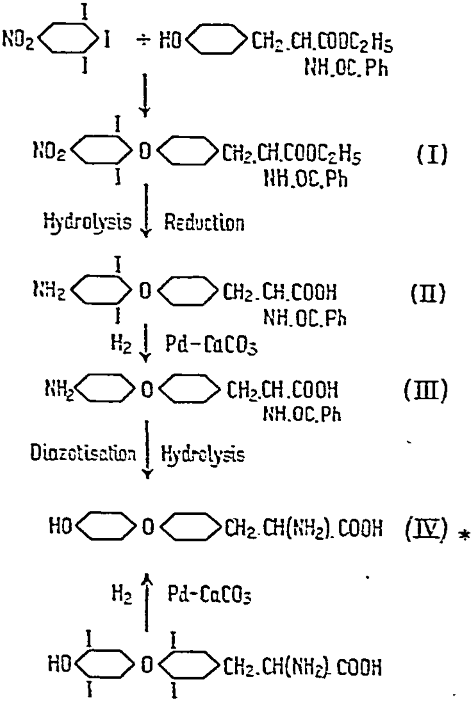
Now if we consider the possible ways in which thyroxine can arise in the body from known simpler precursors, we find that there is one course of reactions which is not only possible but highly probable. Until thyroxine was discovered only one other iodine-containing amino-acid was known; this was 3 : 5-diiodotyrosine, which had been isolated by Drechsel (1895) from a coral, and which is very readily produced from tyrosine in the laboratory by direct iodination of the latter in alkaline solution. (Incidentally it may be mentioned that 3 : 5-diiodotyrosine represents the form in which iodine occurs in the sponge.) We may assume therefore that interaction of iodine with tyrosine is likely to give rise to diiodotyrosine in the animal body. If such formation of diiodotyrosine is an intermediate step in the biological synthesis of thyroxine, the skeletal structure of the latter, as determined by the work on the constitution of thyronine, suggests that the final stage of the synthesis must consist of the coupling of two molecules of diiodotyrosine. There is only one way in which such a coupling is likely to occur—namely, by an oxidation involving the loss of the side-chain of one of the reacting molecules (Fig. 2).

FIG. 2



In this way we should obtain a compound in which the iodine atoms occupied the 3 : 5 : 3′ : 5′-positions of the molecule of thyronine. Certain features of its chemical behaviour also pointed to this constitution for thyroxine, but it was mainly upon the biochemical hypothesis that the attempt at the synthesis of thyroxine was based. The synthetic preparation of a compound of the suggested constitution did in fact yield a product which was chemically and physiologically indistinguishable from thyroxine isolated from the thyroid gland (Harington and Barger, 1927).

FIG. 3



* $[\alpha]_{5461}\left\{\begin{array}{l}+12{\cdot}2^{\circ} \text{ from tyrosine}\\ +13{\cdot}3^{\circ} \text{ from thyroxine}\end{array}\right.$

The successful outcome of this synthesis in itself provided confirmation of the biochemical theory upon which it was based. Further extensive support for this theory has since been provided by chemical and biochemical investigations. The biochemical facts in this connexion will be dealt with later;

at this point it is convenient to mention some recent work of a chemical character which has a direct bearing on the matter under discussion.

The case for the biological origin of thyroxine from tyrosine would obviously be greatly strengthened if the two naturally occurring compounds could be shown to be configuratively related. That they are *in fact so related* has been proved as follows (Canzanelli, Randall, and Harington, 1934). If *N*-benzoyl-*l*-tyrosine ethyl ester is condensed with 3 : 4 : 5-triiodonitrobenzene the compound (I) is obtained; on hydrolysis and reduction this is converted into the benzamido-acid (II) which in turn can be deiodinated to give (III) (Fig. 3). Diazotisation and hydrolysis of (III) then yield thyronine (IV). Since none of the reactions in the above synthesis involve the possibility of a Walden inversion the thyronine finally obtained must be related to the tyrosine employed as starting material. The thyronine obtained in this way from natural *l*-tyrosine had $[\alpha]_{5461} + 12{\cdot}2°$. A second preparation of thyronine was then made by catalytic deiodination of natural *l*-thyroxine, a process which again is known to involve no inversion; in this case the product had $[\alpha]_{5461} + 13{\cdot}3°$, and the configurative relationship between tyrosine and thyroxine was thus established.

At the stage which we have now reached therefore we may take it as established that the thyroid exercises its essential function as a regulator of metabolism through the medium of an internal secretion and that the characteristic physiological *properties of this secretion are concentrated in the* iodine-containing amino-acid thyroxine; moreover the latter compound originates in the body from tyrosine, the synthesis being effected through the intermediate stage of 3 : 5-diiodotyrosine. Discussion of the very important further question whether thyroxine constitutes the complete active secretion of the thyroid will be postponed until the second lecture, and the remainder of the present lecture will be devoted to consideration of the rôle of iodine in the ætiology of simple goitre.

Rôle of Iodine in the Ætiology of Simple Gotire

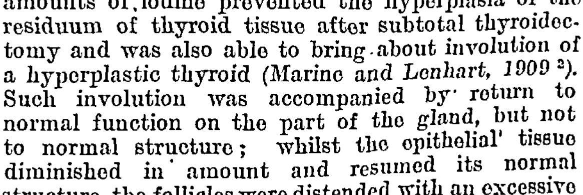
It was first shown by Halsted in 1896 that extirpation of a large proportion of the thyroid gland of a normal animal is followed by a characteristic overgrowth of the residual portion. This overgrowth consists of a change in character and an increase in amount of the glandular epithelium which lines the follicles of the gland. Normally the follicles are spheroidal and filled with colloid, whilst the lining epithelium consists of a single layer of flattened or cubical cells; during the process of hypertrophy which follows subtotal extirpation of the gland the cells of the epithelium become columnar in form whilst the colloid gradually disappears from the follicles; the latter thus lose their spheroidal form, being invaded by processes of the hyperplastic epithelial tissue, until ultimately the latter comes to constitute practically the whole of the gland. Having regard to the cause which elicits these changes they must be considered as being of a compensatory character—i.e., as representing an effort on the part of the small residue of gland to fulfil the function of the whole organ. Such an idea is evidently in accordance with the view that the colloid is the storage form of the thyroid secretion which is itself manufactured by the epithelial cells.

About ten years after Halsted's work appeared Marine began his extensive and fruitful observations on the spontaneously occurring enlargement of the thyroid which was common in man and the domestic animals in the region of endemic goitre where he was working (Cleveland, Ohio). Systematic examination was made of the thyroid glands of dogs (90 per cent. of which in this particular district showed more or less enlargement) and the work was subsequently extended to oxen, sheep, and pigs, and finally to man with similar results. It was found that among the glands thus examined all the stages of the characteristic glandular hyperplasia described by Halsted were represented; moreover it appeared that these changes could occur in two distinct series: (*a*) starting from a normal gland, and (*b*) starting from a colloid goitre (Marine and Lenhart, 1909[1]).

Now chemical investigation of these pathological thyroids revealed a most important fact—namely, that in those glands which exhibited more or less epithelial hyperplasia an inverse relationship existed between the iodine concentration and the total weight of the gland. In other words the more advanced was the hyperplasia the less iodine (and therefore presumably active secretion) did the gland contain. All thyroids which were histologically completely normal contained 0·1 per cent. or more of iodine calculated on the dry weight of the gland; with the appearance of early glandular hyperplasia the iodine concentration fell sharply below this critical level and as the pathological process progressed the iodine concentration ultimately became vanishingly small.

Marine's observations were next extended to the study of experimentally produced thyroid enlargement. He found that the same series of changes which had been produced by Halsted and which he himself was also able to elicit by partial extirpation of the gland, not only arose spontaneously in regions of endemic goitre, but could be brought about in the normal animal by restriction of the intake of iodine. On the other hand, administration of liberal amounts of iodine prevented the hyperplasia of the residuum of thyroid tissue after subtotal thyroidectomy and was also able to bring about involution of a hyperplastic thyroid (Marine and *Lenhart, 1909*[2]). Such involution was accompanied by return to normal function on the part of the gland, but not to normal structure; whilst the epithelial tissue diminished in amount and resumed its normal structure, the follicles were distended with an excessive amount of colloid and the result was in fact a colloid goitre. Reimposition of restriction of iodine intake caused such a colloid gland to undergo a series of changes precisely similar to those which have been described for the normal gland, and there thus emerges an experimental basis for the two series "normal" and "colloid" into which Marine divided his pathological material; the "normal" series representing the primary response of a normal gland to restriction of iodine, and the "colloid" series the response to the same stimulus of a gland which has already passed through the stages of hypertrophy-hyperplasia-involution one or more times.

Following Marine therefore we may recognise a cycle of changes through which the thyroid may pass as follows :—



noting that persistent restriction of iodine may break the cycle by preventing involution of the hyperplasia and causing fibrosis atrophy to supervene with production of myxœdema.

Consideration of the results of Marine's experimental work together with the facts which are now at our disposal regarding the nature of the active principle of the thyroid and regarding the relationship of environmental deficiency of iodine to the occurrence of endemic goitre seems to me to lead to a perfectly reasonable biochemical explanation of the ætiology of simple goitre. It is clear that restriction of the supply of iodine to the thyroid whether due to environmental deficiency of the element or to artificially imposed conditions produces the same effect on the gland as does subtotal extirpation; in the case of iodine starvation also therefore we must regard the reaction of the gland as compensatory in character.

In order that the metabolic processes of the body may be maintained at their normal level it is necessary that the thyroid should provide a certain minimum amount of its active secretion, for the manufacture of which a corresponding minimum amount of iodine must be supplied from exogenous sources. When a large proportion of the gland is removed, as in Halsted's experiments, we have seen that the residual portion responds to the increased demand upon it firstly by using up the colloid which represents its store of ready-made secretion, and secondly by hypertrophy of the glandular epithelium in the effort to increase the efficiency of its synthesising mechanism. It is not surprising that a precisely similar series of events should result from an additional strain imposed upon the gland by restriction of the supply of the essential precursor for manufacture of its secretion.

The conception that simple goitre represents a work-hypertrophy of the thyroid in response to restriction of the exogenous supply of iodine is adequate to account for almost all that is known of the occurrence of the disease in its endemic form. None of the many other theories which have been proposed from time to time to account for the malady have received any substantial support from observation or experiment, whilst, with the possible exception of certain areas in New Zealand, there is no region where goitre is severely endemic in which it has not also been possible to demonstrate an environmental deficiency of iodine.

It is evident that environmental deficiency of iodine alone cannot be made to account for all goitre. Goitre occurs sporadically in regions where there is abundance of iodine, and moreover goitre in man tends to exhibit certain peculiarities which are absent from the thyroid enlargements commonly observed in animals. Interference with the access of iodine to the thyroid may however occur in other ways than as the result of environmental deficiency of iodine, besides which it must not be forgotten that an additional demand for thyroid activity imposed at a time when the intake of iodine is just sufficient for normal requirements will cause a relative deficiency of iodine which is likely to elicit a hypertrophic response on the part of the thyroid.

An example of the first possibility is probably afforded by the goitrigenic effect of diets rich in fats. This phenomenon has long been recognised in a somewhat indefinite way and was demonstrated experimentally by Mellanby and Mellanby (1921) with puppies. The effect is produced particularly strongly by unsaturated fats, and it seems reasonable to suppose that these may interfere with the absorption of the iodine which is taken in with the food and thus prevent the thyroid from obtaining its necessary minimum of iodine, although there may be no environmental deficiency of the latter.

The second possibility—namely, the production of a relative deficiency of iodine owing to imposition of additional demands on the thyroid—is illustrated by the fluctuations in the size of the thyroid which occur in normal women at different stages of the sexual cycle and by the fact that in regions of endemic goitre the disease is particularly liable to manifest itself at times when there is heavy physiological demand upon the thyroid—e.g., at puberty or during pregnancy. In Marine's work also the effects of artificial restriction of iodine intake were much more severe when the restriction was imposed on a pregnant animal—i.e., when there were both relative and absolute deficiencies of iodine.

It seems to me therefore that it is safe to make the generalisation that the immediate cause of all simple goitre is failure of access of a sufficiency of iodine to the thyroid; in the case of endemic goitre this failure is to be ascribed directly to environmental deficiency of iodine; in the case of sporadic goitre either directly to interference with the absorption of iodine or indirectly to the production of a relative iodine deficiency by the imposition of a demand upon the thyroid which, with its available supplies of iodine, it is unable to satisfy. In any case it is certain that no goitrigenic influence is at present known which cannot be antagonised by the administration of extra iodine. An interesting case of a natural antagonism of this sort is afforded by the Eskimos. The Eskimo diet contains a preponderance of fat and in view of the experimental production of goitre in animals by such diets the prevalence of goitre among the Eskimos might be anticipated. In point of fact the disease is unknown among this race, the explanation being that their diet includes a large amount of cod-liver oil, which is rich in iodine.

What has been said concerning the ætiology of simple goitre can be applied also to the ætiology of cretinism which must be regarded as the extreme manifestation of the results of iodine deficiency. In its endemic form cretinism is associated only with the most severely endemic goitre, and it is doubtful whether true cretinism occurs outside these special environmental conditions. A congenital disease strictly analogous with human cretinism has not been produced experimentally in animals; the nearest approach to it has been observed in the puppies born of bitches which have been subjected to subtotal thyroidectomy and/or restriction of iodine during pregnancy; in these cases the thyroids of the new-born puppies show a high degree of hyperplasia. In human cretinism of the extreme type on the other hand the thyroid at birth has already passed beyond the stage of hyperplasia to that of fibrosis atrophy, so that the disease may fairly be described as pre-natal myxœdema. The fact that the thyroid of a cretin has already undergone irreversible pathological change during intra-uterine development is sufficient to explain the relative incurability of cretinism by replacement therapy as compared with the curability of myxœdema in adult life which involves no more than a retrogression of fully developed physiological functions.

The peculiarities which distinguish goitre in man from the corresponding disease in animals are the greater tendencies in man for the disease to terminate in atrophy of the thyroid with resulting myxœdema or cretinism and for the enlargement of the thyroid to occur in nodular masses (so-called adenomata) instead of in the regular manner observed in animals. For the first of these peculiarities there is, so far as

I am aware, no explanation available; it may be noted however that true myxœdema and cretinism seem to be peculiarly human diseases, since even total extirpation of the thyroid fails to reduce the lower animals to a condition entirely similar to that of a human being suffering from advanced myxœdema, nor, as we have seen, can experimental cretinism be readily produced. The tendency towards nodular enlargement of the human thyroid may perhaps be explained by the fact that owing to greater variations in the intake of iodine and to greater fluctuations in the physiological demand upon the gland, the human thyroid may be subjected to more frequent repetitions of the hypertrophy-hyperplasia-involution cycle; it has been shown by Womack and Cole (1931) that repeated induction of such series of changes by injection of irritant substances into the thyroids of animals may give rise in these also to nodular hypertrophy analogous with that found in the human subject.

However this may be, the final proof of the hypothesis of the association of iodine deficiency with endemic goitre is to be found in the success which in recent years has attended prophylactic iodine therapy. The original iodine therapy practised by Coindet and his followers failed because the dosage employed was excessive and because the curative treatment only was tried. Since it has been realised that iodine is of most effective use as a prophylactic and since biochemical work has given an indication of the amount of iodine which is actually required the position has entirely changed. Since the first successful large-scale experiment of Marine and Kimball (1917, 1920, 1921) some fifteen years ago the practice of iodine prophylaxis in regions where there is environmental deficiency of iodine, particularly in Switzerland and in the United States, has become continuously more firmly established, and there seems reason to hope that with the judicious pursuit of such measures endemic goitre and cretinism will ultimately cease to constitute serious problems.

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NORTH STAFFORDSHIRE ROYAL INFIRMARY.—The new ophthalmic wards at this hospital, given by the president, Mr. Edmund Corn, have been opened by Sir William Lister, consulting surgeon to the Royal London Ophthalmic Hospital.

STAPHYLOCOCCAL PNEUMONIA AMONG INFANTS IN A MATERNITY HOSPITAL

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AN outbreak of staphylococcal infections occurred in July, 1933, in a Glasgow maternity hospital of 25 beds. The outbreak was of a decidedly unusual character and presented several features which are not without importance from the standpoint of preventive medicine. It is with pleasure that I thank Dr. W. R. Wiseman, city bacteriologist, Dr. F. E. Reynolds, pathologist, Stobhill Hospital, Dr. R. Cruickshank, bacteriologist, Glasgow Royal Infirmary, and Dr. M. A. Urquhart, bacteriologist, Stobhill Hospital, for kind permission to make full use of the valuable reports which each of them furnished and for advice they have given in the preparation of this paper.

Description of the Outbreak

FOUR FATAL PNEUMONIA CASES

In July, 1933, four infants, who had all been born in the hospital, died after an illness of short duration, the cause of death being ascribed in each instance to pneumonia. The following statement shows the date of birth, date of sickening, &c.

Case.	Sex.	Date of birth.	Date of dismissal from hospital	Date of sickening.	Date of death.
		July	July	July	July
1	F.	1st	13th	13–14th	15th
2	M.	1st	14th	14–15th	17th
3	M.	4th	—	16th	18th
4	F.	5th	18th	18th	19th

In all four cases the birth was normal, and the infants were healthy during the first 12 days of life.

Cases 1, 2, and 4 were reported to have become ill within 24 hours of leaving hospital, although no abnormality was observed at the time of dismissal, and, in the remaining case, death took place in the institution. At autopsy of two of the cases (Nos. 3 and 4), performed by Dr. F. E. Reynolds, pulmonary consolidation confined to one lobe was found, together with signs of a general toxæmia, and, therefore, it was at first suspected that a pneumococcal infection of unusual virulence and infectivity was the ætiological factor. Accordingly, on the following days (July 21st and 22nd, 1933), material obtained from the posterior pharynx of 18 members of the nursing staff and three of the mothers, whose infants had died, was examined by Dr. R. Cruickshank. From eight of the nurses and from two of the mothers, Group IV. pneumococci were isolated, but in no instance was a pneumococcus of Types I., II., or III. recovered. Furthermore, pneumococcus was not found in cultures from nasal and from throat swabs of infants in the hospital; nor, as will appear later, was this organism cultivated from material obtained at autopsy of the two cases examined. Thus, at an early point in the investigation, evidence was available which excluded a pneumococcal infection as the cause of the deaths. A streptococcal infection, on the other hand, did not, on epidemiological grounds, appear likely to be the responsible agent, because among the mothers in the hospital there had been no recent cases of puerperal sepsis or other manifestations of streptococcal invasion. Members of the nursing staff also, who were carefully examined, appeared to be free from any septic foci.

The identity of the responsible infection became apparent when the bacteriological and histological findings in the two cases autopsied were correlated with the cultures obtained by swabbing the infants in the hospital.

The following are the reports on the two cases autopsied, together with brief clinical histories. The bacteriological results were confirmed by Dr. Cruickshank, who also performed mouse inoculation tests.

CASE 3.—This infant when two days old was thought to have a slight cold, as there was some nasal discharge and occasional cough. On July 16th, when 12 days old, he became seriously ill with frequent respiration, and on the following day he was found to be fevered; signs of pulmonary consolidation were detected and some blood-stained discharge from the mouth was noted. Death took place on the 18th.

Post-mortem examination revealed the presence of a copious exudate over the whole of the pleural surface of the left lung and adjacent parietes. There was consolidation of the lower lobe of the same lung but, so far as touch was concerned, no consolidation of the upper lobe. There were no pathological changes in the right lung. A number of large petechial hæmorrhages under the visceral pericardium, especially in the neighbourhood of the posterior auriculo-ventricular groove, were observed. There was general congestion of the organs.

On *histological examination* of sections of the left lower lobe, numerous irregular and closely approximated abscesses were seen. The pulmonary tissue intervening between these was intensely congested and the alveoli were filled with an exudate, which, in places, was largely fibrinous and, in other parts, hæmorrhagic. In the intervening tissue also were numerous colonies of staphylococci. The lining of the smaller bronchi had been almost completely desquamated and the lumen contained pus and blood. At one place an abscess was seen surrounding the bronchial wall, portions of which had become necrotic, permitting the eruption of pus into the lumen. In the left upper lobe microscopical preparations showed the fibrinopurulent layer on the surface of the organ to contain a considerable amount of blood. In the pulmonary substance catarrhal changes in the bronchi were marked and there was a small amount of fibrino-cellular exudate in the alveoli. The interstitial cells had proliferated and small areas of collapse were present. In both lobes blood-vessels were greatly congested.

The *bacteriological results* were as follows:—

Organ examined.	Direct culture.	Mouse inoculation test.
Lung ..	*Staphylococcus aureus.*	Mouse survived.
Spleen ..	do.	Mouse died. *S. aureus* recovered.
Liver ..	No growth.	Test not performed.
Heart ..	do.	Mouse survived.

Commentary.—"At the time of the autopsy the case was considered one of acute lobar pneumonia affecting the lower lobe, with consequent pleurisy of the whole of the left pleural cavity. The result of the bacteriological examination, however, showed that it was not an ordinary case of pneumonia, as the pulmonary infection was due to staphylococcus and not to pneumococcus. The result of the histological examination was in agreement, the left lower lobe containing numerous abscesses, microscopical in size. The tissue intervening between these abscesses was shown to be completely consolidated, and this explains why the macroscopical appearances simulated those of acute lobar pneumonia due to pneumococcus. The case further resembled an ordinary acute lobar pneumonia in that the infection was confined to one, namely, the left lower, lobe. No precise reason could be offered to explain why the upper lobe of this lung or the right lung had not been infected."

CASE 4.—This infant made satisfactory progress after birth, and when taken from hospital at 10 A.M. on July 18th she appeared to be quite well. At 3 P.M. the same day, however, respiratory embarrassment was noticed; three hours later a little blood was coughed up, followed, it was reported, by vomiting of blood. Two practitioners who were called in diagnosed pneumonia. At 10 P.M. the same evening blood appeared from the nose, and during the night difficulty in breathing increased until death took place at 4 A.M. on July 19th. The duration of illness, from 3 P.M. on July 18th to 4 A.M. on the following day, was thus only about 13 hours.

At *autopsy* the right pleural cavity was found to contain a large amount of blood, and in the pericardial sac there was a small quantity of blood-stained fluid. The right lower lobe was completely consolidated, the lobe being reddish-purple in colour, but on macroscopical examination no consolidation of the other lobes was found. The heart-muscle was dark in colour and one or two small petechial hæmorrhages were seen under the visceral pericardium. Marked congestion of all the organs, especially the liver, was present. The stomach contained blood.

On *histological examination*, sections of the right lower lobe showed large portions to be consolidated owing to the alveoli being completely filled with blood. In the hæmorrhages numerous colonies of staphylococci were present, and, here and there, abscess formation was commencing. In the right upper lobe the lining of the bronchi had been desquamated to a great extent and the lumen contained the desquamated cells with a few red blood corpuscles. The histological picture of this lobe was exactly similar to that of the left upper lobe in Case 3 in that proliferation of interstitial cells had occurred with small areas of collapse: in parts a certain amount of hæmorrhage had occurred into the alveoli and small colonies of staphylococci were encountered.

The *bacteriological results* were as follows:—

Organs examined.	Direct culture	Mouse inoculation test.
Lung ..	Coliform bacilli.	Mouse died. *S. aureus* recovered.
Spleen ..	No growth.	Test not performed.
Liver ..	*S. aureus.*	Mouse died. *S. aureus* recovered.
Heart ..	No growth.	Mouse survived.

Commentary.—"The case was one of intense hæmorrhagic inflammation of the lower lobe of the right lung due to *S. aureus*, with the usual signs of general toxæmia. The blood in the stomach was due, probably, to swallowing hæmorrhagic exudate which had occurred into the right lung and had been coughed up."

The above results showed that in each case death had been due to *S. aureus* infection. A striking feature of both cases was that on naked-eye examination the pulmonary consolidation was confined to a single lobe.

With regard to Cases 1 and 2, in which no opportunity for a post-mortem examination was presented, it may be stated that in the former hæmorrhages were reported just before the end, and in the latter there were convulsions on the day of death. As these infants became ill at the same time as the cases investigated by autopsy, and, as the clinical history was similar, it is a reasonable presumption, amounting almost to a certainty, that they also succumbed to a staphylococcal infection of the lungs.

RESULTS OF NASAL AND THROAT SWABS OF INFANTS IN THE HOSPITAL AND COMPARISON WITH CONTROL GROUP OF INFANTS

The bacteriological and histological findings just described form an interesting comparison with the results of nasal and throat swabs of the infants in the hospital. The bacteriological work involved in the examination of these swabs and of swabs taken from a control group of infants in another hospital was done by Dr. Wiseman, who took a special interest in the outbreak. On July 20th, 6 infants, who were then in isolation on account of slight nasal discharge or occasional cough, were swabbed. Cultures from the nasal swabs yielded profuse growths of *S. aureus* in all cases, an unexpected and very arresting feature of the preparations. In 4, pure cultures were obtained, and in 2, streptococci were also present. With reference to the throat swabs, *S. aureus* was cultured in three cases, in each of which it was accompanied by streptococci: streptococci alone were found in two, and in the sixth case *Staphylococcus albus* and streptococci. Pneumococcus was not found in any specimen.

On July 26th, 15 infants, who were not in isolation and whose ages on that day ranged from three to ten days, with an average of 6·3 days, were examined. *S. aureus* was recovered from either nose or throat in all but 3. Nasal swabs gave profuse and vigorous growths of *S. aureus* in 12 cases, of which 10 were pure cultures, and in the remaining 2 cases streptococci were also found. Throat swabs yielded cultures of *S. aureus* in 9 cases: in only one instance, however, was a pure growth obtained, while in 7 streptococci were also present and in one case *Staphylococcus albus*. The organism, as cultivated from the nose in this group of 15 children, was much more vigorous in proliferation than that from the throat. These findings, especially the results of the nasal swabs, were considered by Dr. Wiseman to be most unusual and to indicate a widespread *S. aureus* carrier condition among the infants.

As a control, swabs were taken from a group of 16 healthy infants in another hospital on August 2nd, on which day the ages of this group ranged from 3 to 18 days, with an average of 7·7 days. Six of the nasal swabs yielded *S. aureus* and in two of these cases the same coccus was also isolated from the throat. In two cases *S. aureus* was cultured from the throat only. In each instance it was observed that the growths were scanty and that *S. albus* was also present. Cultures from eight of the infants were negative for *S. aureus*. The control group of children and the infants in the infected hospital were accordingly found as groups to exhibit marked differences in the bacteriological picture as far as concerned the numbers of *S. aureus* present. As it was evident that practically all the infants in the institution were harbouring *S. aureus*, it was recommended that further admissions should cease, and on the advice of a rhinologist a nasal ointment (2 per cent. argyrol) was employed in an effort to control the carrier condition. Fortunately no further cases occurred. By August 7th the last patient had left the hospital and on opening five days later, after disinfection had been carried out, there was no recurrence of the infection.

COURSE OF EVENTS IN THE HOSPITAL PRECEDING THE PNEUMONIA CASES

The exact source of infection in this outbreak was not discovered, but the course of events was ascertained to have been as follows:—

(1) On June 22nd, 1933, an infant in the hospital, then seven days old, was noticed to have developed sepsis of the subcutaneous tissues of the shoulder, which, in spite of surgical treatment, rapidly extended and was followed by widespread sloughing and undermining of the skin. The infant died in the hospital on June 30th. No examination of the pus was made until a few hours before death, when a swab was taken from a deeply seated pocket of pus. *Bacillus coli* and a late lactose-fermenting organism were isolated but these were probably secondary invaders.

(2) On July 2nd one of the mothers in the hospital and on July 6th two of the mothers began to suffer from mastitis. Incision of the abscess was done in all three cases between the 5th and 11th, and in no instance was the pus examined. A feature of these cases, of which the significance could not be tested, was that immediately prior to the development of mastitis they were all attended by the same nurse, who, unfortunately, had left the institution before inquiries were made.

(3) Between July 1st and 16th, and especially during the first five days of the month, an unusual prevalence of minor septic skin lesions was recorded. On an average three to four children required attention for septic spots, although on one day as many as nine infants were noted as having been treated.

(4) On July 12th an infant, who was then six days old, developed a breast abscess which required incision two days later. The infant was isolated in the hospital from the beginning of the disease. No bacteriological examination of the pus was made.

(5) Between July 13th and 29th 11 infants were isolated in the hospital for periods varying from three to six days on account of mild catarrh of the upper respiratory tract.

It was between July 13th and 18th that four infants sickened and died after an illness of less than 48 hours' duration from what was clinically regarded as pneumonia. In two of the cases death was proved at autopsy to have been due to *Staphylococcus aureus* pneumonia.

It may also be noted that among the 55 mothers who were dismissed from the hospital between July 1st and August 7th, and who resided in Glasgow, 6 cases of suppurative mastitis were subsequently found on a follow-up inquiry. If the 3 cases of breast abscess which occurred in the institution between July 2nd and 6th are included, this means that there were in all 9 instances of mammary infection among the adult patients. Of the 6 cases in which mastitis appeared subsequent to dismissal there were 2 which are worthy of note. The mother of infant No. 4, who died of staphylococcal pneumonia on July 19th, was dismissed from hospital on July 18th, and ten days later she contracted a mammary gland infection which required incision. The other case was the mother of the infant who, as noted above, was found on July 12th to be suffering from a breast abscess. This mother left hospital before her child and returned twice daily to nurse her baby until his dismissal on July 26th. On the 28th a breast abscess developed in the mother which had to be incised about a week later.

It is necessary to mention what is regarded as an important factor in the spread of infection once this had gained entrance. The infants normally slept at night in cots in the ward beside their mothers. If, however, a child should be noisy he would be removed to a large room, which was the infants' bathroom but was also known as the night nursery. This room, incidentally, was deficient in light and ventilation, and after the epidemic the defects were remedied by structural alterations. In the early part of July, 1933, an unusual number of children had to be taken to the nursery on account of being restless at night, and on one occasion as many as 18 infants slept there. The nursery contained two barrows for holding infants; one, 7 ft. long with eight compartments, and the other, 4 ft. long with five compartments. When the barrows were fully occupied there was thus a distance between heads of infants of 10½ in. in the former and 9¾ in. in the latter. It is obvious that once an infection had obtained a footing, sleeping arrangements provided by barrows of this nature would readily facilitate the spread of disease. Such barrows should probably not be used at all, and if in institutions they are found indispensable, then they should be reserved for purposes of transport and other functions of a temporary nature.

Discussion

In the absence of bacteriological examination of pus from the case of phlegmonous abscess, from the cases of mastitis, and from the cases with septic spots, there is no indisputable evidence that the series of events narrated is not simply a collection of chance happenings. The first case with the phlegmonous subcutaneous sepsis may have been due to a staphylococcal or to a streptococcal infection; there is agreement, however, that in superficial septic skin lesions and, more particularly, in mastitis the staphylococcus is the organism most frequently recovered. Since two of the fatal cases were proved to have succumbed to a staphylococcal pneumonia, and the other two similar cases not autopsied were almost certainly due to the same infection, and since examination of the infants, some of whom were suffering from symptoms of upper respiratory-tract catarrh, showed that they were practically all harbouring *S. aureus* in the nasal and faucial passages to a very unusual degree, it is justifiable to conclude that, with the possible exception of the first case, the various events are all closely related ætiologically. In other words, all the cases are considered to be different clinical manifestations of the same infection and to form one epidemiological event.

In outbreaks of a streptococcal origin varying clinical representations are not uncommonly encountered—e.g., tonsillitis, scarlet fever, otitis media, puerperal sepsis, erysipelas, and pneumonia—but in an outbreak of staphylococcal causation a similar phenomenon is unusual. In ordinary circumstances *S. aureus* is thought not to possess the same degree of infectivity as that of the streptococcus. Attention is drawn to the fact that no serious case of illness occurred among the mothers and that the terminal phase of the outbreak consisted of four cases of fatal pneumonia. The latter fact supports the statement of Menten and others (1932) that "*Staphylococcus aureus* seems to have the propensity for inducing disease in infants that is not so evident in older persons." It is also remarkable that among the infants who suffered from minor septic skin lesions, no case of pemphigus neonatorum occurred. Swendson and Lee (1931) state that numerous observers have confirmed the fact that the responsible organism in this infection is a specific strain of *S. aureus*.

With regard to staphylococcal pneumonia, the disease is not uncommon and is generally secondary either to a septic focus elsewhere in the body or to an acute infection such as influenza, measles, or whooping-cough.

Chickering and Park (1919) in an investigation of 312 deaths from influenzal pneumonia found 135 to be associated with *S. aureus* in the lung. These cases were considered to possess characteristic clinical manifestations.

Menten and others in a bacteriological study at necropsy of 131 cases of pneumonia in children, both primary and terminal, isolated the staphylococcus alone in 11 instances and mixed with other bacteria in 65 cases.

Reimann (1933), after quoting a number of investigations, states that the incidence of staphylococcus lung infection has not changed materially since Netter's report of 1892, in which he found the staphylococcus in pure culture in 7·7 per cent. of his cases. Reimann describes 6 cases of what is regarded as primary staphylococcal pneumonia; in all his cases there were preceding conditions—viz., influenza-like infection (2 cases), asthmatic bronchitis, sore-throat, chronic nephritis, and malnutrition.

I have found no record of any outbreak of staphylococcal infection, including cases of pneumonia in infants.

It will appear from the facts recorded here that serious risks may be involved in any institution where infants are tended if lesions due to *S. aureus* are not regarded as of potentially serious import.

Summary

Four infants born in July, 1933, in a maternity hospital died of pneumonia within four days of each other. Three of the children became ill within 24 hours of leaving the institution, although no abnormality was observed at the time of dismissal, and the other one died in the hospital. The duration of illness in each case was about two days. At autopsy, which was held in two cases, the cause of death was shown to be staphylococcal pneumonia, and a feature of the pathological findings was that in both instances consolidation was on macroscopical examination confined to a single lobe, thus simulating acute lobar pneumonia. From swabs taken from infants in the hospital, six of whom were suffering from catarrhal symptoms, profuse growths of *Staphylococcus aureus* were recovered from the nasal and faucial passages in practically all cases. Examination of a control group of infants in another institution demonstrated the unusual incidence of the staphylococcus infection among the children in the infected hospital. It was ascertained that within the previous fortnight an infant had died of a phlegmonous abscess, three mothers and an infant had suffered from suppurative mastitis, and that among the infants there had been an unusual prevalence of minor septic skin lesions followed by a number of cases of mild upper respiratory catarrh. Further, 6 cases of mastitis after dismissal were discovered among 55 mothers who left the hospital between July 1st and August 7th. With the possible exception of the phlegmonous abscess, all the foregoing cases, including the 4 fatal pneumonia cases, are considered to have been different manifestations of staphylococcal infection and to form one epidemiological group. The spread of the disease was possibly facilitated by the nature of the temporary sleeping arrangements provided for the infants.

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RECENT OBSERVATIONS ON PSITTACOSIS

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DURING last year psittacosis, or parrot disease, has again attracted wide attention and the memory of the pandemic of 1929–30 has been revived. K. F. Meyer and B. Eddie have reported the widespread infection of Californian aviaries and breeding farms, and many human cases have occurred in Holland and especially in Germany. According to the figures of J. Fortner and R. Pfaffenberg, the number of human cases in Germany was nearly 150 during the first six months of 1934, that is almost three-quarters of the total number in 1930. The recent disease has generally appeared in the form of family endemics, and the investigations have revealed, with rare exceptions, the remarkable fact that the source of the infections was not a sick parrot, but an apparently healthy budgerigar. In Germany, as in most European countries, the commercial importation of parrots and parakeets has been prohibited since 1930. This has prevented the importation of the disease from overseas, but the widespread dissemination of the psittacosis virus in 1930 evidently infected the domestic stocks, and the home-bred parakeet has become the conveyor of the disease to human beings. The budgerigar is less susceptible to psittacosis than are most species of parrots, and frequently becomes an apparently healthy carrier of the virus. This fact was proved beyond doubt for the first time in 1931, at the Robert Koch Institut in Berlin, where I was in charge of the psittacosis investigations in Prussia. The case was reported by the president of the Reichsgesundheitsamt, at the Office Internationale d'Hygiène Publique, Paris, in October, 1931, and April, 1932. The history of the case was as follows:—

In April, 1931, a family in Cologne, consisting of husband, wife, and stepson, fell ill with typical psittacosis which ended fatally in one case. Four apparently healthy budgerigars were found by the inspecting veterinary officer in the home of the patients. The birds were killed and sent to Berlin. To save experimental animals I pooled the suspensions of the organs (heart, spleen, liver, and lungs) of all the birds and diagnosed the presence of the virus by transmission to some canaries, all of which died of psittacosis.

The recent increase of psittacosis in certain places suggests that latent infection may also exist among budgerigars in this country. Obviously such an infection would remain unnoticed, even unsuspected, so long as no human cases attracted attention. Even the development of the disease and occasional deaths from psittacosis among the birds might escape observation. The epidemic of 1930 was widespread in England and it would be astonishing if no nidus existed.

The existence of such a nidus has been proved conclusively by certain work carried out at the National Institute for Medical Research during 1934. Through the kindness of the Ministry of Health I received on May 22nd last a budgerigar which had died four days previously. The bird was home-bred at an aviary in the South of England. The heavy contamination of the internal organs with a spore-bearing bacillus necessitated the filtration of the material. Mice were inoculated intraperitoneally with the filtered suspension of spleen and liver and died on the fifteenth and eighteenth days of typical psittacosis. A few weeks later two further birds, a rosella parakeet and a budgerigar from the same source, succumbed to psittacosis. In these two latter cases the diagnosis was made, not only by transmission to mice, but also by the direct microscopical demonstration of the virus in the typically affected organs of the birds. At the same time I was able to find psittacosis in three budgerigars which died in a large private aviary, in two of them immediately, by the miscroscopical demonstration of the virus. In this latter instance the infection was not due to an existing nidus but to a fresh importation. The history of that importation reveals a new fact.

On April 27th last a consignment of about 500 red cockatoos (galahs) and budgerigars arrived at Plymouth direct from Adelaide in Australia. The birds were intended for Belfast, but were collected provisionally by a dealer in London. It is believed that there had been a number of casualties among the birds during the voyage. Very shortly after their arrival here 8 galahs and 6 budgerigars died from psittacosis. The virus was demonstrated by transmission to mice, and in 5 of the birds—for the first time in naturally diseased parrots—directly by microscopical examination. The remainder of the Australian consignment had already been shipped to Belfast, where the infection continued, as the examination of 5 further dead galahs proved, so that the whole consignment, fortunately quarantined after warning by the English authorities, had to be destroyed. A second cargo of 52 budgerigars and 90 cockatoos from Australia, already at sea when the infection of the first was diagnosed, arrived a month later. Afterwards it became known that 43 of the birds had died during the voyage. Some of the birds immediately after arrival had been distributed to well-known aviculturists in this country. One of the fanciers, who had been warned after receipt of the birds, was the owner of the private aviary mentioned above, where the infection continued for some time.[*]

The fact that psittacosis, which previously was believed to occur naturally only in South America, is endemic also among Australian parrots and parakeets was unknown hitherto. A little later Meyer and Eddie reported the demonstration of the virus in budgerigars trapped in the vicinity of Adelaide. On their arrival in California the birds appeared perfectly healthy. They were strictly isolated, yet one month after their arrival cases of psittacosis occurred among them.

Quite recently, after the official communication of my results to the Australian authorities, infection has been proved in that country by F. M. Burnet (Med. Jour. of Australia, 1934, ii., 743.) Healthy parrots and parakeets, purchased at random from different dealers in Adelaide and Melbourne, were examined. Of 24 birds in Adelaide 33 per cent. were detected as carriers of the virus in the enlarged spleen. In Melbourne 9 or 10 out of 12 grass parakeets were probably carriers.

The freshly isolated strains, together with an old strain which I owe to the kindness of Prof. S. P. Bedson, presented the desired opportunity for me to continue at the National Institute for Medical Research my studies of the psittacosis virus, which were started in the beginning of 1930 at the Robert Koch Institut in Berlin. Some of the results of these previous and recent investigations may be mentioned here.

PSITTACOSIS IN THE MOUSE

The research on the disease in many laboratories during the pandemic of 1930 has afforded two facts of paramount importance for the diagnosis of psittacosis: the discovery of the virus and the recognition of the white mouse as a suitable experimental animal. The latter fact, established first by C. Krumwiede and co-workers in 1930, and studied thoroughly by T. M. Rivers and G. P. Berry, has made the laboratory work with psittacosis much less dangerous than when parrots, canaries, or rice birds were used (F. Neufeld and Levinthal). Nevertheless, the utmost caution must be observed, and this has been emphasised by some recent laboratory infections in Germany, one of which ended fatally. The experimental disease in the mouse is very characteristic. According to the amount of the virus injected intraperitoneally, the animals succumb after from two to thirty days. The symptoms of the illness, which may last for a period of one to several days before death occurs, consist of ruffled fur, eyes closed, often with some discharge, apathy, sometimes, but not often, diarrhœa.

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[*] On April 20th, 1935, a consignment of parrots was imported from Australia by special permit for avicultural purposes. Most of them died on the voyage. Examination of a number of birds which died after arrival here revealed again the presence of the psittacosis virus.

The conditions found on post-mortem examination show three main types:—

(1) *Death 2–5 days after infection.*—The peritoneum contains a little sticky and stringy fluid, the liver is yellowish-pale and mottled, the spleen is of normal size and bright red, sometimes full of yellowish spots. The pericardial fluid is somewhat increased. Microscopically the liver and the spleen show small hæmorrhages and necrotic areas. The virus is abundantly present in the cells of the peritoneal fluid, of the omentum between stomach and spleen, and especially in the spleen, but is found in smaller amounts in the liver and the pericardium, but not in the pericardial fluid. The focus of infection is the reticulo-endothelial system, the cells of which are packed with the germs and show karyopyknosis and vacuolisation and fatty degeneration of the cytoplasm.

(2) *Death 5–15 days after infection.*—The abdominal cavity is filled with thick fibrinous masses, the intestines stick together, liver and spleen are coated with thick fibrinous membranes, which can be easily stripped off and cover a perihepatitis and perisplenitis. The fluid in the pleural and pericardial cavities is increased and clouded by fibrin and endothelial cells. The virus is present abundantly in the peritoneal exudate, especially in the perihepatitic and perisplenitic membranes, and in the cells of the pericardial fluid and in the pericardium itself. It is scarcer in the spleen.

(3) *Death 15–30 days after infection.*—The abdomen is distended, sometimes enormously, by a cloudy ascitic fluid, the pleural and pericardial cavities are filled with a serous-fibrinous exudate. Liver and spleen may be enlarged and friable. Serositis dominates the syndrome. The virus is extremely scarce in the ascitic exudate and in the spleen. The most suitable material for its demonstration is the pericardium.

In all three types the blood of the mouse contains very little virus, which is only to be seen occasionally in an endothelial cell. This is in striking contrast to its abundance in the blood of naturally or experimentally infected birds, where many desquamated endothelial cells are packed with it, or large clusters and groups of the virus are to be seen in the fluid when the cells have broken down.

As in the human patient, *pneumonia* is not a regular symptom of the disease in the experimental animal.

In the intraperitoneally infected mouse a lung affection is only observed occasionally. In early stages circumscribed red spots which resemble infarcts are found; microscopically these spots, and sometimes larger areas, consist chiefly of hæmorrhages into the alveolar walls, which compress the alveoli. In later stages an entire lobe or even one complete side may be transformed into a dark red, liver-like organ which suggests a genuine pneumonia; but the microscopical examination reveals that the alteration represents a collapse of the empty alveoli caused by hæmorrhages and œdema with accumulation of cells in the alveolar walls. Apparently this lung condition arises from the blood-vessels, where the virus attacks and destroys the endothelial cells.

To sum up, the essential characteristic of psittacosis is the infection and the destruction of the reticulo-endothelial system.

THE CAUSAL AGENT

The ætiological agent of the disease is a filter passer, as Bedson, Western, and Simpson reported first in January, 1930, and as many investigators confirmed at the very beginning of their researches during the pandemic of 1930. Thus the former "bacillus psittacosis" of Nocard (1892) and the different bacteria more recently described as the causal agent may be discarded definitely as ætiological factors. Very soon, however, it became evident that the filtrability of the psittacosis virus is rather limited. Only the more porous types of filter candles such as Chamberland L2 and Berkefeld V allow the virus to pass. In complete agreement with these filtration experiments are the observations with centrifugation; even a short spinning at relatively low speed diminishes appreciably the degree of infectivity of the supernatant fluid (Levinthal), and a high-speed centrifugation for a prolonged time deprives the supernatant fluid almost completely of the virus, which is concentrated in the deposit (Bedson and Western). Both the results of filtration through filter candles and of centrifugation indicated that the virus is of considerable size. At the National Institute for Medical Research I found an excellent opportunity to define more exactly the minimum size of the virus particles. Mr. Elford kindly placed his filtration arrangements at my disposal. By means of his carefully calibrated "gradocol" membranes the minimum size of the psittacosis virus was determined as 0·22–0·33 μ.

This result proves that the causal agent of psittacosis must be within the limit of microscopical resolution. Indeed, it corresponds exactly to the microscopical observations which were first published in the spring of 1930, and have been confirmed since then by nearly all investigators who have studied the disease. At a meeting of the Berliner Microbiologische Gesellschaft on March 24th, 1930, I reported the discovery of minute coccoid bodies in exudates and in certain infected organs, and described shortly afterwards the extraordinary pleomorphism of the germ, which strikingly resembles that of *B. tularense*. R. D. Lillie (April 11th, 1930) described the same structures and compared them with rickettsia. A. C. Coles (THE LANCET, 1930, i., 1011) was the first to report the same micro-organisms in blood-films of human cases. Bedson and J. O. W. Bland thoroughly studied during the following years the development of the micro-organisms and favoured for a period the hypothesis, that this virus is not a bacterium, but possesses protozoal affinities with a developmental cycle of amœboid forms or plasmodium, morula, division and subdivision of elements of morula, elementary bodies; but recently they have withdrawn this hypothesis and agree with the opinion that this virus is a micro-organism with bacterial affinities.

The general confirmation of the findings and the satisfaction of nearly all investigators as to the nature of the bodies leaves scarcely room for any doubt about the ætiological significance of the structures. Nevertheless, I endeavoured to make the final conclusive step according to the postulates of Henle and Robert Koch, that is, to obtain a pure culture capable of subculture in any series and to test the virulence of the cultivated virus. The first success in obtaining multiplication in an artificial medium (modified Maitland medium) was reported in 1930 at the 1st International Microbiological Congress (Levinthal). Since 1932 Bedson and Bland have studied the growing of the virus bodies in explanted pieces of mouse spleen and chicken embryo. Since January, 1934, I have been able to cultivate several strains† in a medium, similar to the medium of C. P. Li and Rivers for the cultivation of vaccinia and louping ill virus.

A small amount of thoroughly minced tissue of a 9 to 11 days old chicken embryo is suspended in 5 c.cm. tyrode solution in Carrel flasks. This medium yields an abundant growth after incubation for 3–4 days after inoculation, and this is easily subcultured by the transference of one drop of the ground-up tissue particles to freshly prepared flasks. Any of these well-grown cultures, if tested on the mouse, shows an undiminished virulence of the virus—

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† Mentioned in the report of the Medical Research Council for the year 1933–34. January, 1935, p. 38.

that is, an infectivity still in dilutions of 10^{-8}. Moreover, the cultures offer an excellent material for watching the development of the micro-organisms during the different periods of cultivation by means of suitably prepared and stained specimens, which reveal again the remarkable pleomorphism of the virus.

The multiplication occurs exclusively in the surviving tissue, preferably within the endothelial and epithelial cells; only after the breaking up of the degenerating cells do the virus bodies become free and appear in the fluid. In a freshly prepared medium the virus is mainly found in the form of deeply staining cell inclusions varying much in size and shape, which, if broken up by force during the preparation, crumble to irregular pieces. These inclusions are similar in nature to the cytoplasmic inclusion bodies of other virus diseases, but with the difference that the matrix of the inclusion body is basophilic, as Bedson and Bland rightly emphasise. Later on these inclusion bodies are more and more replaced by intracellular colonies of all sizes, composed of the distinct and separate minute virus bodies. These two extremes, and all kinds of intermediate forms, are to be seen often enough at the same time.

It seems to me evident that this pleomorphism depends upon the environmental factors. When the virus invades a healthy, vigorous cell, an immediate multiplication is hampered by unknown factors. The virus passes through a latent period, during which division is checked. The virus particles swell up and form a mass embedded in a deeply stainable matrix, which obscures all detail. This enlargement may be due to the accumulation of nutriment in the virus particles. The result is a typical inclusion body. Later, when the host-cell weakens more and more as shown by the progressive vacuolisation of the cytoplasm and the karyopyknosis, unbounded growth of the virus is able to take place. Division then commences and an intercellular colony is formed, composed of distinct elements, which become more and more uniform and minute, until the whole of the cell is packed with these bodies and finally bursts.

When on the other hand the virus encounters a considerably damaged cell, a prompt and unchecked multiplication leads to the immediate formation of such colonies, which, from the initial stage, are composed of the minute and distinct elements. As an intermediate stage there occur small colonies composed of distinct cocci and diplococci nearly as large as staphylococci, but without any matrix.

In my opinion these larger forms are not a regular initial stage of the virus, as Bedson and Bland still believe. They are forms, developing whenever the ratio between nutrition and multiplication is temporarily disturbed. Moreover, if this virus is indeed a minute bacterium, multiplying by simple division, there cannot exist an "initial" stage and the words young or old lose any significance.

Finally, still another morphological group has to be mentioned, more conspicuous in infected animals than in cultures. This is obviously an involution or degenerative form, swollen up and pale, appearing sometimes as rings, sometimes as large discs, sometimes as barrel-shaped rods with bipolar staining, resembling very thick pasteurellæ.

The demonstration of this organism in any one of its typical forms must be the conclusive point in every definite diagnosis of the disease. The multiformity of the psittacosis virus seems to me the most characteristic feature of the microbe. The cultivation and the reproduction of the disease by the pure culture prove beyond doubt the ætiological significance of the micro-organism. The behaviour of the virus in the preparations of infected organs and the observation of the growing culture, together with the filtration experiments, reveal the characteristic attributes of a minute bacterium. All these facts warrant the name I have given to the microbe and published in 1930: *Microbacterium multiforme psittacosis*.

In addition, it may be mentioned briefly that I have attempted to immunise mice by active vaccination. The vaccines were prepared in various ways and injected intraperitoneally several times. The addition of a small amount of formalin or the photodynamic inactivation of the virus by the method of Perdrau and Todd with methylene-blue and radiation proved to be very effective. The treated mice became immune against a ten-million-fold lethal dose of the virus.

This work has been carried out under a grant of the Rockefeller Foundation. I wish to express my thanks to the Medical Research Council and Sir Henry Dale, F.R.S., for the opportunity of continuing my researches at the National Institute. My thanks are also due to Captain S. R. Douglas, F.R.S., Mr. W. J. Elford, Ph.D., and to the medical staff of the Ministry of Health.

CARDIAC MENSURATION

By Franklin G. Wood, M.B. Camb., D.M.R.E.

RADIOLOGIST TO THE CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, VICTORIA PARK, AND TO THE GERMAN HOSPITAL, LONDON

There is no need to-day to stress the importance of radiology in the diagnosis of pulmonary disease. Chest radiograms have reached a perfection scarcely dreamed of ten or fifteen years ago, when all the radiologist could do after studying a thoracic plate was to hazard a guess as to the presence or absence of gross disease. But it must be confessed that the investigation of the heart by radiological means has not reached an equal state of perfection. This is the more surprising when we consider that a fluid-filled thick-walled organ like the heart, situated in the centre of a chamber largely filled with air, should be an ideal subject for the radiologist. It is true that X ray methods have been employed in cardiac examination, and orthodiagraphy has been, and still is, extensively used for the purpose. But this method has several disadvantages, and in my opinion the teleradiogram offers decided advantages over the older method.

The methods which can be utilised in the X ray examination of the heart are fluoroscopy, orthodiagraphy, "barium swallow" examination, and teleradiography in the erect or prone position. In this paper only the last will be considered.

METHOD OF PRESENT INVESTIGATION

In the X ray department of any chest hospital a large number of routine X ray examinations are made, some of them for the examination of the lungs and some of them on heart cases, and a method for accurate estimation of the heart's size and the size of its different chambers would therefore be very useful in the elucidation of the cases seen. To find out whether an accurate standard of heart measurement could be obtained, a large number of chest radiograms of apparently normal cases were studied, using first the method described by Vaquez and Bordet, which is at present used in orthodiagraphic

TABLE I.—(FOR RAPID MULTIPLICATION OF THE TRANSVERSE AND LONGITUDINAL DIAMETERS)

	Transverse diameter																
Longitudinal diameter	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
15	150	165	180	195	210	225	240	255	270	285	300	315	330	245	260	275	290
16	160	176	192	208	224	240	256	272	288	304	320	336	352	368	384	400	416
17	170	187	204	221	238	255	272	289	306	323	340	357	374	391	408	425	442
18	180	198	216	234	252	270	288	306	324	342	360	378	396	414	432	450	468
19	190	209	228	247	266	285	304	323	342	361	380	399	418	437	456	475	494
20	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520
21	210	231	252	273	294	315	336	356	378	399	420	441	462	483	504	525	546
22	220	242	264	286	308	330	352	374	396	418	440	462	484	506	528	540	562
23	230	253	276	299	322	345	368	391	414	437	460	483	506	529	552	575	598
24	240	264	288	312	336	360	384	408	432	456	480	504	528	552	576	600	624
25	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650
26	260	286	312	338	364	390	416	442	468	494	520	546	572	598	624	650	676
27	270	297	324	351	378	405	432	459	486	513	540	567	594	621	648	675	702
28	280	308	336	364	392	420	448	476	504	532	560	588	616	644	672	700	728
29	290	319	348	377	406	435	464	493	522	551	580	609	638	667	696	725	754
30	300	330	360	390	420	450	480	510	540	570	600	630	660	690	720	750	780

movement. If the exposure is more than one-tenth of a second the heart outline, especially on the left border, is liable to be blurred.

If all these details have been carefully attended to it will be seen on examining the film that the right dome of the diaphragm lies between the tenth and eleventh ribs at its point of maximum convexity, whilst the left dome is at a slightly lower level.

The clavicles are horizontal and their inner ends should be exactly equidistant on each side of the vertical column. If they are not equidistant, it will mean that the exposure has been made with the patient in a position of slight rotation unless scoliosis is present (see Case 2). When the scoliosis is of a moderate degree, mensuration can still be carried out on a routine radiogram or on a film taken after rotating the patient into alignment under screen control.

In valvular lesions there may be (1) changes in the outline of the borders of the heart, of which the most important is the left border; and (2) changes in the relations of the different measurements to each other.

(1) *Outline of the heart.*—The changes in outline caused by single valvular lesions are moderately well known, and a description of them is given in some of the more recent test books. Figs. 3 and 4 show tracings of the heart outline in mitral disease and in aortic disease, and it will be seen that whereas in mitral disease there is a convexity below the aortic knob, in aortic disease there is a concavity. A study of these outlines, which seem to be reproduced regularly in a radiogram, enables the type of valvular lesion to be determined with considerable accuracy in a simple case.

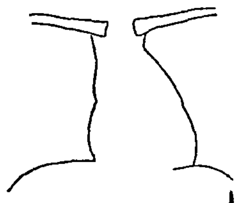

FIG. 3.—Early mitral stenosis.

TABLE II.—*Average Heart Measurements at Six Feet Prone*

Area in sq. cm. (LT ×TD)	150	175	200	225	250	275
Ao.	1·4	2·0	2·1	2·1	2·2	2·2
Trans. diam.	8·6	8·8	9·1	9·3	9·5	9·8
LA	5·4	5·5	5·7	5·9	6·0	6·2
LV	9·3	9·6	9·9	10·2	10·4	10·7
RV	7·9	8·1	8·3	8·5	8·7	8·9
RL	5·1	5·3	5·5	5·7	5·9	6·1
	300	325	350	375	400	425
Ao.	2·2	2·3	2·3	2·4	2·5	2·6
Trans. diam.	10·0	10·3	10·5	10·8	11·0	11·3
LA	6·3	6·5	6·6	6·8	7·0	7·1
LV	10·9	11·2	11·5	11·8	12·1	12·4
RV	9·2	9·4	9·6	9·8	10·0	10·3
RL	6·3	6·5	6·7	6·9	7·1	7·3
	450	475	500	525	550	575
Ao.	2·7	2·7	2·8	2·8	2·8	2·9
Trans. diam.	11·5	11·8	12·0	12·3	12·5	12·8
LA	7·3	7·4	7·6	7·7	7·9	8·0
LV	12·6	12·9	13·2	13·5	13·8	14·1
RV	10·5	10·7	10·9	11·1	11·4	11·6
RL	7·5	7·7	7·9	8·1	8·3	8·5
	600	625	650	675	700	725
Ao.	3·0	3·1	3·1	3·2	3·2	3·2
Trans. diam.	13·0	13·3	13·6	13·9	14·1	14·3
LA	8·1	8·3	8·4	8·6	8·7	8·8
LV	14·4	14·7	15·0	15·2	15·5	15·7
RV	11·8	12·0	12·2	12·4	12·7	12·9
RL	8·7	8·9	9·1	9·3	9·5	9·7

TABLE III.—*Average Heart Measurements at Six F Erect*

Area in sq. cm. (LT ×TD)	150	175	200	225	250	2
Ao.	1·7	1·8	1·9	2·0	2·0	2
Trans. diam.	8·0	8·2	8·4	8·6	8·9	9
LA	4·5	4·7	4·9	5·0	5·2	5
LV	8·8	9·1	9·4	9·7	10·0	10
RV	7·4	7·6	7·8	8·0	8·2	8·
RL	5·1	5·3	5·5	5·7	5·8	6·
	300	325	350	375	400	425
Ao.	2·2	2·2	2·3	2·3	2·3	2·4
Trans. diam.	9·3	9·6	9·8	10·0	10·3	10·5
LA	5·5	5·7	5·8	6·0	6·1	6·3
LV	10·5	10·8	11·1	11·4	11·6	11·9
RV	8·6	8·8	9·0	9·2	9·4	9·6
RL	6·2	6·4	6·6	6·8	7·0	7·2
	450	475	500	525	550	575
Ao.	2·4	2·4	2·5	2·6	2·6	2·7
Trans. diam.	10·7	10·9	11·2	11·4	11·6	11·9
LA	6·4	6·6	6·7	6·9	7·0	7·2
LV	12·2	12·5	12·8	13·1	13·3	13·6
RV	9·8	10·0	10·2	10·4	10·6	10·8
RL	7·4	7·6	7·8	8·0	8·2	8·4
	600	625	650	675	700	725
Ao.	2·8	2·9	2·9	2·9	3·0	3·0
Trans. diam.	12·1	12·3	12·5	12·8	13·0	13·2
LA	7·4	7·5	7·7	7·8	8·0	8·1
LV	13·9	14·2	14·5	14·7	15·0	15·3
RV	11·0	11·2	11·4	11·6	11·8	12·0
RL	8·6	8·8	9·0	9·2	9·4	9·6

(2) *Relation of the different measurements to each other.*—If the measurement LV is divided by the measurement LA an index LV/LA is obtained, which is of some value in differential diagnosis. In normal radiograms it varies between 1·7 and 2·0 in the erect view, and 1·6 and 1·9 for the prone position. Where a mitral valvular lesion is present the ratio is reduced, since the relative value of LA increases with enlargement of the left auricle and pulmonary artery. In extreme cases it may be as low as 1·3. When the aortic valve is also involved the ratio tends to have a normal value. The following list shows the alterations of the index found in different heart lesions:—

Aortic stenosis	Normal
Aortic regurgitation	
Mitral stenosis	Reduced
Mitral stenosis with aortic disease ..	Normal or slightly reduced
Mitral stenosis with tricuspid disease	Reduced
Pulmonary stenosis	

A study of the heart outline and the figures obtained by mensuration enables us in many cases to decide from the radiogram what valve or valves are diseased.

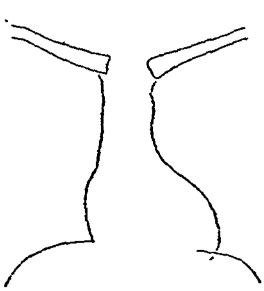

FIG. 4.—Early aortic valvular disease.

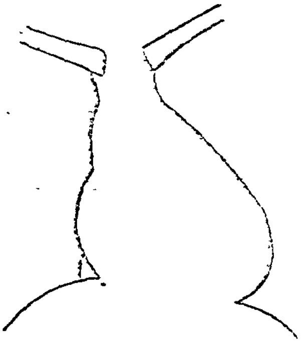

FIG. 5.—Mitral stenosis with tricuspid regurgitation.

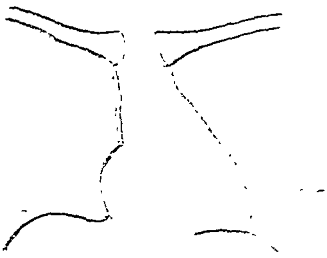

FIG. 6.—Pulmonary stenosis.

The position may be summarised as follows:—

Mitral disease (Fig. 3).—There is a prominence on the left border of the heart below the aortic knob, which increases with the development of stenosis of the valve. In advanced cases the outline of the left auricle is seen on the right border of the heart and encroaches on the root of the aorta. LA is increased and the ratio LV/LA diminished to 1·5 or less. Increase of the lung markings from congestion is frequently seen. A radiogram taken in the first oblique position will show the dilated left auricle.

Aortic valvular disease (Fig. 4).—The left ventricle is enlarged and protrudes downwards and outwards. The left border of the heart in the auricular region tends to be concave. LV and RV are increased and the ratio LV/LA is normal. Changes in the outline of the aortic arch can be confirmed by a radiogram taken in the second oblique position.

Mitral stenosis with aortic disease.—The heart outline usually resembles that seen in mitral stenosis. All the measurements are increased. The ratio LV/LA is normal or slightly reduced.

Congenital heart.—I have refrained from discussing the numerous forms of congenital heart disease, as the exact lesion is so seldom established with certainty ante mortem. If the pulmonary artery is enlarged the shape of the heart has some resemblance to that seen in mitral stenosis, the measurement LA is increased in size and the ratio LV/LA falls to 1·5 or less. An example of the outline seen in pulmonary stenosis is shown in Fig. 4.

ILLUSTRATIVE MEASUREMENTS

NORMAL CASES

CASE 1.—Female, aged [illegible]. Routine chest radiogram to exclude pulmonary tuberculosis.

Erect.		Normal.
TD	[illegible]	
LD	[illegible]	
TD × LD ..	[illegible]	
Ao	[illegible]	[illegible]
Trans. diam. ..	[illegible]	[illegible]
LA	[illegible]	[illegible]
LV	[illegible]	[illegible]
RV	[illegible]	[illegible]
LV/LA	[illegible]	1·7—2·0

Prone.		Normal.
TD	[illegible]	
LD	[illegible]	
TD × LD ..	[illegible]	
Ao	[illegible]	[illegible]
Trans. diam. ..	[illegible]	[illegible]
LA	[illegible]	[illegible]
LV	[illegible]	[illegible]
RV	[illegible]	[illegible]
LV/LA	[illegible]	1·6—1·9

The measurements are close to the average, both in the erect and in the prone positions.

CASE 2.—Male, aged 23. To show the effect of rotation. Radiograms were obtained with the patient straight and also after rotating him slightly to the right and left oblique positions.

Erect.	
TD	[illegible]
LD	[illegible]
TD × LD ..	[illegible]

	Patient straight.	Normal.	Right oblique position.	Left oblique position.
Ao	3·1	3·3	2·9	3·4
Trans. diam.	12·6	12·5	12·2	12·6
LA	7·5	7·5	6·5	7·2
LV	14·7	14·5	15·2	15·0
RV	11·7	11·5	11·5	11·7

The aortic measurement is diminished in the first oblique position and increased in the second. The other measurements show some alteration, LV being relatively increased and LA diminished in the oblique positions.

VALVULAR LESIONS

CASE 3.—Female, aged 5 (Fig. 2).

Prone.		Normal.
TD	[illegible]	
LD	[illegible]	
TD × LD ..	[illegible]	
Trans. diam. ..	[illegible]	[illegible]
LA	[illegible]	[illegible]
LV	[illegible]	[illegible]
RV	[illegible]	[illegible]
LA/LV	[illegible]	[illegible]

LV and the transverse diameter are within 1 mm. of the normal, LA is increased by 1·1 cm. and the LV/LA ratio is diminished. If the transverse and longitudinal diameters of the heart only were measured, the abnormality would be missed.

The X ray diagnosis was mitral stenosis, which was in agreement with the clinical findings.

CASE 4.—Male, aged 14½ (Fig. 4).

Prone.		Normal.	
TD	23·5		
LD	16·2		
TD × LD ..	375		
Ao	2·3	2·4	—0·1
Trans. diam. ..	12·0	10·8	+1·2
LA	6·5	6·8	—0·3
LV	12·9	11·8	+1·1
RV	11·2	9·8	+1·4
LV/LA	1·89	1·60 —1·90	

The left border of the heart is concave below the aortic knob. The left ventricle is prominent. The transverse diameter, LV, and RV are increased more than 1 cm. The ratio of LV : LA is normal. The radiological diagnosis was aortic disease, which agreed with the clinical findings.

CASE 5.—Male, aged 27 (Fig. 5).

Prone.		Normal.	
TD	28·2		
LD	19·7		
TD × LD ..	555		
Ao..	—	—	
Trans. diam. ..	16·5	12·5	+4·0
LA	12·1	7·9	+4·2
LV	17·6	13·8	+3·8
RV	15·0	11·4	+3·6
LV/LA	1·45	1·60 —1·90	

Gross cardiac enlargement. The ratio of LV : LA is diminished to 1·45. Diagnosis: mitral stenosis with tricuspid regurgitation. Confirmed by autopsy.

CASE 6.—Female, aged 30 (Fig. 6).

Erect.		Normal.	
TD	23·8		
LD	16·2		
TD × LD ..	385		
Ao..	2·3	2·4	—0·1
Trans. diam. ..	12·5	10·2	+2·3
LA	8·4	6·0	+2·4
LV	13·0	11·5	+1·5
RV	11·7	9·3	+2·4
LV/LA	1·55	1·7 —2·0	

The outline of the heart is similar to that seen in mitral stenosis. It can be distinguished from mitral disease by the absence of enlargement of the left auricle. The radiological diagnosis of pulmonary stenosis agreed with the clinical findings.

I should like to take this opportunity of acknowledging the valuable assistance received from my colleagues at the Victoria Park Chest Hospital.

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CLINICAL AND LABORATORY NOTES

POSTERIOR INFERIOR CEREBELLAR AND VERTEBRAL THROMBOSIS

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THE interesting case of posterior inferior cerebellar thrombosis recorded by Prof. Hall and Dr. Eaves[1] prompted one of us to unearth records of a similar, though more diffuse, thrombosis.

CASE RECORD

A male, aged 76, suffering from complete dysphagia with pain and tenderness over the larynx and pharynx and constant cough from the irritation of unswallowed saliva, was seen in consultation and admitted to Ancoats Hospital on Oct. 22nd, 1929.

History.—During the previous two weeks several teeth had been extracted at intervals, the last extraction being performed five days before admission to hospital. There was no history of having swallowed a foreign body or bolus of unmasticated food. On Oct. 20th he noticed during the night that he was unable to swallow his saliva. This had continued up to the present time. He complained of pain over the pharynx, larynx, and trachea which was increasing. On Oct. 21st breathing was said to be "throaty" and phonation difficult.

Previous medical history.—Five years ago he was under the care of his own doctor with slight fits occurring about every three months, which in time disappeared. He had a paralysis once and this was most marked on the right side of the body.

Condition on admission (Oct. 22nd).—There was complete inability to protrude the tongue, accompanied by slurring of speech, and he was unable to swallow liquids. He complained of some tenderness over the larynx and trachea, and a constant cough, caused by the accumulation of saliva in the pharynx. There was complete paralysis and anæsthesia of the soft palate, paralysis of both sides of the tongue and bilateral pharyngeal constrictor paralysis, but the larynx was normal, the true vocal cords presenting perfect abduction and adduction. Owing to the patient's condition no further record of the state of the central nervous system was possible, but it is stated that the pupils reacted normally to light and accommodation. Blood pressure: systolic, 155; diastolic, 85. Wassermann reaction negative in a dilution of 1 in 5: urine, specific gravity 1015; acid; albumin +, acetone a trace.

Further progress.—Oct. 24th: patient appears worse. Fed yesterday with stomach-tube; appears too weak for this to-day. Respirations 36. Oct. 25th: patient seems slightly better; can now protrude tongue *slightly*, speech improved and he can be understood. Has had two feeds of a pint of milk by stomach-tube early to-day. This evening patient has started to swallow again and managed to get one pint of milk down in sips. A soft œsophageal tube readily passes into the stomach.

The patient slowly sank and died on Oct. 27th.

During the course of the illness the temperature never rose above 99° F., the pulse varied from 110 to 140, and the respirations between 32 and 36.

EXAMINATION OF BRAIN AND ARTERIES

Histological examination of arteries.—Sections were made of the basilar, the right and left vertebral and the right and left posterior inferior cerebellar arteries. All showed marked atheromatous changes of long standing. Atheroma was not so pronounced in the basilar as in the other arteries, but was most profound in the right posterior inferior cerebellar, which showed a lumen largely occupied by thrombus. There was also some thrombotic material in the lumen of the right vertebral and the left posterior inferior cerebellar arteries, but in none of these was the channel completely occluded. From both naked-eye and microscopical examinations of the arteries there was evidence of recent thrombosis following long-standing atheroma and that this had led to serious interference with the blood-supply of the medulla.

Sections of medulla were cut at three levels and stained to show the condition of the nerve-cells. The hypoglossal nucleus and nucleus ambiguus on both sides showed pronounced changes. The cells as a whole were badly stained and showed marked chromatolysis. Whereas a few cells exhibited a fair number of Nissl's granules and a central nucleus, most of them were almost devoid of granules and the nucleus excentrically placed. In some the nucleus was absent and the cell evidently in a state of advanced disintegration. Many of the cells were shrunken and deformed.

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[1] Hall, A. J., and Eaves, Elizabeth, C.: THE LANCET, 1934, ii., 975.

The hypoglossal nucleus and the nucleus ambiguus seemed to be about equally affected on the two sides. The cells of the inferior olive stained much better and it was clear that the disturbance was chiefly in the retro-olivary region. There was clear evidence, also, that the upper part of the medulla had suffered more severely than the lower. The maximum effect was upon the upper parts of the hypoglossal nucleus and the nucleus ambiguus, and, to a lesser extent, on the upper parts of the dorsal vago-glossopharyngeal nucleus and the spinal nucleus of the fifth nerve on both sides. There was no evidence of softening or complete disintegration anywhere.

The histological appearances were consistent with the condition of the vessels and suggested an incomplete obstruction to the arterial supply of the upper medulla on both sides.

SUMMARY AND INTERPRETATION

In this case two things are clear from the pathological side:—

(1) There had been a long-standing and widespread atheroma of the intracranial vessels. This is evident from an examination of the vessels and the atrophic changes in the cerebral cortex, especially the frontal lobes.

(2) Recently thrombosis had occurred causing a "patchy" obstruction of the bulbar vessels with consequent changes in the medulla. The thrombotic material was most obvious in the lumen of both posterior inferior cerebellar arteries and the right vertebral, but histological sections showed a diffuse and widespread thrombosis in the finer intramedullary branches, especially in the upper part of the medulla.

On the anatomical side we have:—

(1) Profound changes in the cells of the hypoglossal nucleus and nucleus ambiguus on both sides. The severity of the lesion is about equal on the two sides.

(2) The disturbance is chiefly in the retro-olivary region and the upper medulla has suffered more than the lower.

(3) Whilst it is easier—owing to the larger size of the cells—to estimate the extent of the damage to the hypoglossal nucleus and the nucleus ambiguus, there is evidence which suggests that other nuclei in the retro-olivary region (such as the spinal nucleus of fifth nerve and the dorsal vago-glossopharyngeal nucleus) have not suffered so severely.

(4) The anatomical localisation is, on the whole, consistent with the pathological and clinical findings.

The long-standing character of the arterial changes and the patchy nature of the thrombosis demand great care in interpretation. It is not a clear-cut focal lesion from which we can deduce with confidence.

The most interesting points have reference to the nucleus ambiguus. The hinder part of this, which gives origin to the accessory portion of the spinal accessory nerve, has been called the laryngeal nucleus. This is because the accessory fibres join the vagus and later leave that nerve as the recurrent laryngeal branch which innervates all the intrinsic muscles of the larynx, except the cricothyroid. The sections prove that it is the cephalic part of the nucleus ambiguus which has suffered most, and the clinical report shows paralysis of the palate and pharyngeal muscles but not laryngeal muscles, which is consistent with escape of laryngeal nucleus (caudal part of nucleus ambiguus).

The arterial lesion is patchy and incomplete. We think this accounts for the fact that the nuclei appear to have suffered more than fibre tracts and also for the fact that there is no softening or complete disintegration. It may account for the absence of pupillary signs which are common in retro-olivary lesions.

Some disturbance of taste would be expected, but it was not possible to test this satisfactorily and therefore reference to it cannot be made. Paralysis of the tongue is accounted for by the bilateral lesion of the hypoglossal nucleus.

A dissociated sensory loss is almost the rule in such cases, but, owing to the condition of the patient, a satisfactory examination could not be made.

Lastly, it is difficult to explain the pain and tenderness over the larynx unless it is a manifestation of the involvement of the sensory tracts in the medulla. Its limited localisation makes such a suggestion a little unconvincing.

FRACTURED SPINE WITH FÆCAL INCONTINENCE

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ON August 18th, 1934, Mr. A fractured his spine in a motor accident, the body of the first lumbar vertebra and transverse processes of the second and third on the left side being involved. He was admitted to a hospital (600 beds), where he lay on his back for five weeks without a splint or other method of immobilisation. During this time he was incontinent of fæces; it was dealt with by placing at the bedside a bedpan, which he passed beneath him when he felt wet. In the sixth week he was allowed up, and on Sept. 26th he returned home. He was able to shuffle comfortably, but could not lift his feet clearly from the floor. He had no control of his sphincter ani.

His doctor referred him to me with two queries: (1) When could he start work? (2) Did he need a spinal support?

The man protested that he was well, being keen to return to duty; he had a wife and three children. On inquiring about the action of his sphincters he admitted his fæcal incontinence. He entered hospital, where he was nursed on his face. His rectal sense and control returned immediately, but disappeared when he was turned on his back in order to use the bedpan, as the bowels acted before the receptacle could be introduced.

On Oct. 8th a Watson Jones plaster spinal jacket was applied; the result was immediate—his incontinence disappeared entirely. After a week he got up and was discharged home. For four or five days the incontinence returned while he was on his feet, but not when he was sitting or lying down (apparently the jacket did not completely fix the spine). During the following week the bowels acted three to four times a day, but rectal sense and control were established. The diarrhœa settled without treatment, and was succeeded the next week by pruritus ani, which disappeared with toilet measures.

He started work on Dec. 4th, but after four days he developed erysipelas at his right ear. He was admitted to another hospital, and it subsided. He restarted work on Jan. 14th, 1935, since when he has continued in good health. The plaster is still in position, that is, after six months. It is softening but is comfortable. It is to be replaced shortly by a light spinal support.

The case is reported for two reasons: (1) on account of its interest, incontinence being relieved by nursing on the face—that is, in extension. (2) Because it supports the method of treatment of a fractured spine so ably described and urged by Mr. Watson Jones.

References.—Jones, R. W.: Brit. Med. Jour., 1931, i., 300; Jour. Bone and Joint Surg., 1934, xvi., 30.

VOLVULUS OF THE SMALL INTESTINE
HERNIATED THROUGH AN ABNORMAL ORIFICE IN THE MESENTERY

By Y. Cantin, M.R.C.S. Eng.

MEDICAL SUPERINTENDENT, CIVIL HOSPITAL, PORT LOUIS, MAURITIUS

A young Mahomedan shopkeeper, aged 27, was admitted to the Civil Hospital, Port Louis, on August 28th, 1934.

At about 11 A.M. on the previous day, immediately after his morning meal, he had been seized with violent pain in the lower abdomen, and an urgent but ineffectual desire to empty his bowel. He vomited his meal, but the pain, severe and intermittent, persisted throughout the day. An enema was administered to him in the afternoon, and some fæcal material but no flatus was returned. He vomited twice during the night, and was seen the next morning by a medical practitioner, who diagnosed perforation of the appendix, and advised his immediate removal to hospital.

On admission (about 24 hours after the onset of his illness) his condition was as follows. Body covered with clammy sweat; tongue moist, but features drawn and anxious. Pulse 140, poor; temperature, 37°C. (98·6° F.). Lower abdomen distended and not moving well with respiration. No rigidity, but diffuse tenderness over lower abdomen. No visible peristalsis. No borborygmi heard on auscultation. Liver dullness present.

On rectal examination some tenderness in Douglas's pouch.

There was a strong smell of acetone in the breath, and analysis confirmed the presence of acetone and of glucose in the urine (66 g. per litre). Twenty units of insulin were injected immediately, and shortly afterwards 20 c.cm. of 20 per cent. saline solution intravenously as a peristaltic stimulant. This probably initiated reverse peristalsis, for the patient immediately vomited bright green material. The acuteness of the onset, coupled with ineffectual tenesmus, suggested the possibility of a volvulus, and immediate laparotomy was decided upon.

The patient's condition, rendered still more precarious by the associated diabetes, led us to use local infiltration anæsthesia rather than give a general anæsthetic. Hyoscine hydrobrom. gr. 1/100 and morphia gr. 1/6 were injected as premedication, and after infiltration of the abdominal wall with 1/200 novocain a median subumbilical laparotomy was performed. As soon as the abdomen was opened, dark blood-stained serum welled out of the pelvis and gangrenous distended coils of the ileum came into view. The cæcum was felt to be empty. It was at first difficult to diagnose the exact cause of the obstruction, but on closer inspection a volvulus of the small intestine was discovered. The torsion was undone, and it was then found that the limbs of the loop emerged from a vertical slit, about 2½ in. long, in the mesentery, about 4 in. above the ileocæcal junction. The orifice was enlarged and the loop reduced. As the gut was not viable and the patient could not stand the resection of fully 2 ft. of gut, the affected loop was brought to the surface and drained, after stitching up the hole in the mesentery and the abdomen closed up. The patient died five hours after operation.

Hernia of the small intestine through an abnormal opening in the mesentery is rarer than its herniation through the transverse mesocolon. In a recent paper devoted to "Les hernies dites trans-mésocoliques," Ménégaux[1] was able to collect no less than 49 cases in which the ileum had often completely passed into the lesser sac through an opening in the transverse mesocolon. After reviewing the theories put forward to account for the existence of the abnormal opening—viz., perforation of a pre-existing peritoneal recess; trauma; fenestration during the process of development of a poorly vascularised zone of the mesocolon—Ménégaux sums up in favour of the last hypothesis as being the most satisfactory and as being also applicable to hernias of the ileum through an opening in the mesentery. In the case under review, the orifice did not correspond in situation to any of the peritoneal fossæ described in the neighbourhood of the cæcum, nor was there any history of trauma. Hence it is probable that the intra-abdominal pressure on the one hand and the aspiration exerted by the excursions of the diaphragm on the other led to the gradual ascent of a loop of ileum through a pre-existing orifice in the mesentery. This loop had secondarily undergone torsion, with resultant strangulation.

An almost exact replica of this case is to be found reported by Morestin in 1899 to the *Société de Chirurgie* and referred to by Lejars.[2] Morestin's patient however recovered; the gut was viable, and the surgeon confined himself to undoing the torsion and reducing the intestine through the hole in the mesentery.

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[1] Ménégaux, G.: Jour. de Chir., 1934, xliii., 321.

[2] Lejars, F.: Chirurgie d'Urgence, Paris, 1921, vol. i., p. 434.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

The meeting of the section held on May 17th was devoted to a discussion on

Diet in Pregnancy

Mr. **Eardley Holland**, the president, who took the chair, said he had been anxious that this subject should be fully debated. He had always regarded it as one of first importance but it tended to be somewhat neglected by British obstetricians.

Dame **Louise McIlroy** said it had yet to be ascertained how best to feed a pregnant woman. Moreover, it was not easy to induce an interest in the problem. The two elements chiefly concerned, the mother and the ovum, ought to be as one; for the ovum should fit in with the metabolism of the mother, and the *feeding* should be the same for both; but there were warring elements, causing disease. When the ovum arrived in the uterus, the maternal metabolism became altered, even in the normal pregnancy. Nitrogen must be supplied for the enlarging uterus, and the demands of the fœtus would be met, even at the expense of the mother. In considering the mother's nutrition one must pay attention not only to what was ingested, but (even more important) to what was actually assimilated; it was always difficult to know why one woman easily assimilated the food she took, while another obviously assimilated only a portion. Another factor requiring notice was the placenta, which served as intermediary between mother and fœtus. From a study of metabolic aberrations one could work back to what was regarded as the normal, and the speaker believed that the vomiting, toxæmia, and hæmorrhages of pregnancy, and puerperal sepsis would prove to be deficiency diseases, and that the solution of some of the problems they presented would be found in the larder and the kitchen rather than the laboratory or pharmacy.

Of nutritional requirements in pregnancy the first was water, and the pregnant woman should take at least three or four pints daily, preferably fresh rather than boiled. Milk was a valuable article of diet, and Dame Louise could not understand why there should be so much outcry about the destruction of vitamins by pasteurisation when so little attention was paid to the cooking of vegetables, and to the disadvantages of living on preserved fruits, tinned foods, and other artificial diets. During normal pregnancy glycogen was stored in large quantities, and if the intake was seriously deficient, proteins and fats were drawn upon, and there might be vomiting and ketosis. A loss of nitrogen took place in early pregnancy, and the greatest retention was during the fifth and sixth months. This storage served to compensate for the hæmorrhage which would occur at parturition, and for lactation. The nitrogen was derived from meat, eggs, and fresh vegetables. In the second half of pregnancy, however, meat should not be taken; among better-class patients there was usually over-eating at this time, and the effect of excessive protein diet had to be countered by open-air exercise, and by taking more carbohydrates. The intake of fats should also be low; the pregnant mother should be told to avoid fatty (especially fried) foods, and should be content with one egg a day. Of vitamins the most important here were A and D, and it was best to obtain them from fresh foods. If the mother were given too much vitamin D the fœtus would grow excessively, while in large quantities this vitamin had a very toxic effect. The fœtal blood contained more calcium than the maternal blood, and to ensure a sufficiency it was well to administer calcium in a chemical compound. In women complaining of cramp, backache, and insomnia, calcium sometimes gave dramatic results. Iron was another essential: it controlled vomiting, and was very useful for morning sickness.

The situation could be summarised as follows. The pregnant woman must have a good mixed diet of fresh foods, including raw fruits and vegetables, a medium supply of proteins, and a small supply of fat. Every pregnant woman should walk two miles a day. Mostly the woman's state of nutrition could be estimated by her general appearance and by periodic weighing. A woman who was overweight would probably also be toxic. In the last six months of pregnancy she should gain about 3 to 3½ lb. a month, or 16 to 18 lb. in the six months. Women should be taught food values, and how to buy and cook vegetables, avoiding expensive artificial and tinned foods; the latter were bought largely to save trouble.

Dr. G. W. **Theobald** said that according to the dietetic deficiency hypothesis all the toxæmias associated with pregnancy were caused by an absolute or relative insufficiency of some substance or substances in the diet, the most important being calcium, and this insufficiency led to an inharmonious working of the various physiological processes of the body, and ultimately to hepatic dysfunction. The implications were: (1) that the toxæmias of pregnancy could be prevented; (2) that there was no essential difference in the mode of causation of any of them; (3) that renal symptoms were merely incidental, the kidneys playing no part in the causation of the toxæmias; and (4) that there was no such thing as a pregnancy toxin. While it was true that extensive destruction of liver, kidneys, and other organs might be found in association with eclampsia, it was equally true that significant histological lesions might be absent in the organs of women dying of eclampsia; hence he concluded that gross structural damage was incidental, and not causally associated with eclampsia. Hepatic lesions could be caused by taking a high protein diet which was deficient in certain factors. Why should eclampsia be peculiar to the pregnant state? The fundamental difference between the pregnant and non-pregnant states was that the fœtus robbed the mother of important substances; indeed, the fœtus was a true parasite.

Prof. S. J. **Cowell** said that in the middle months of pregnancy the mother was storing calcium at a greater rate than the fœtus; it was only in the last months that the fœtus was taking more calcium than the mother. A colossal storage of calcium took place in the last month, and this accounted for premature children being so liable to develop rickets. Adequate calcium storage depended on a sufficient supply of calcium and phosphorus in the diet and a sufficient intake of vitamin D. Prof. Cowell referred to an American investigation in which 188 pregnant women were given extra calcium and vitamin D; among these there were 2 cases of toxæmia. But among 230 cases to whom these extras were not given 30 women developed toxæmia. As for the child there was much experimental evidence that calcium feeding during pregnancy helped normal calcification of bones and teeth. The simplest plan was to make use of the naturally rich source of calcium, milk, and it was highly desirable for the pregnant mother to drink at least two pints daily. Other rich sources were cheese and green vegetables. Egg-yolk was rich in vitamin D, and cod-liver oil was a valuable addition.

Dr. H. N. **Green** said it was not yet known exactly what part diet played in resistance to infection. Vitamin A was apparently of greatest importance in this connexion, and in pregnancy the demand for it was increased. It seemed clear that the vitamin-A reserves of the woman in pregnancy were often lower than in the normal adult, and the septic cases showed lower reserves than did the non-septic cases. It was difficult to decide whether the low vitamin-A reserve was a predisposing factor, or was merely an effect of the disease; it might even represent a physiological stage in the puerperium. It was reasonable to ensure a good supply of vitamin A in pregnancy by giving moderate doses of some liver oil when the appropriate foods were not available. Low vitamin-A reserves were probably associated with low reserves of other nutritional factors. An important fact was the possible toxic effect of liver oil concentrates in large doses; this could be neutralised by large amounts of vitamin B. It was recognised that ample reserves were no guarantee against infection, but optimum supplies of vitamin A during pregnancy would reduce liability to a morbid puerperium. The final assessment of the value of vitamin A could be made in a scientific investigation in a country such as India.

Dr. Lucy **Wills** spoke on the nutritional anæmias in pregnancy. She divided her subject into nutritional anæmia due to deficiency in iron, and that due to the pernicious anæmia factor. The first of these was world-wide, the second was of great importance in tropical countries. Most industrial populations in this country had a diet containing 0·01 g. of iron, and that sufficed to keep blood values up. But it was not enough for women who sustained repeated pregnancies; hence a low-grade anæmia was common among such women, not only of the very poor, but also of the more fortunate classes. In some stock-raising regions of South America, hyperchromic anæmia was common—especially where hookworm disease was prevalent—but where rations of meat were taken that anæmia was much less frequent. Green vegetables and whole cereals should be taken by pregnant women, as well as red meat ration. The nutritional anæmia of pregnancy was a macrocytic anæmia, not idiopathic pernicious anæmia. It was due to a deficiency in the diet of Castle's extrinsic factor, and it could be prevented or cured by adding to the diet liver or liver extracts or marmite. The result of such additions was often dramatic.

Prof. JAMES YOUNG suggested that a committee might be appointed to consider diet in pregnancy and lay down dicta for pregnant women.

Mr. VIVIAN GREEN-ARMYTAGE spoke of complications of pregnancy by such diseases as osteomalacia, beri-beri, sprue, in all of which calcium was at its lowest ebb, though unaccompanied by toxic symptoms. Though apparently healthy at birth, babies should be cared for in the first months of life on anti-rachitic lines. One-fertility sterility was often traceable to dietetic defects, particularly in regard to minerals.

Dr. K. J. WESTMAN said that deficiency of vitamins B and A in the food might lead to premature labour, to abortion, and to children being deficient. In six cases in which women had habitually aborted, a living child was secured by adding calf's liver to the food.

Dr. DOROTHY C. WILSON referred to lack of sunlight in the causation of osteomalacia, and instanced a region in India in which pregnant women were very liable to that disease. It had been largely reduced by making alterations in the diet.

Mr. R. H. PARAMORE considered that excess of food was a potent cause of eclampsia. One of the best methods of treating post-partum eclampsia was by bleeding. Post-partum hæmorrhage was never followed by post-partum eclampsia.

Dr. DOROTHY LOGAN asked whether the cheaper baker's yeast was as efficacious as marmite; some mothers were so poor that even 6*d.* a quart for milk was a hardship. At an institution with which she was connected a custom had been carried out since 1920 of giving three pennyworth of calcium lactate in a fresh state to antenatal cases, and the cost of that was 6*d.* a fortnight. It was a method of guarding against a calcium drain at small cost.

Sir ROBERT ARMSTRONG-JONES, alluding to the proposal to appoint a committee on the subject, said the People's League of Health already had a committee on somewhat similar lines.—The PRESIDENT spoke favourably of Prof. Young's proposal, and promised consideration of it at the next meeting of the council.

THE SILVER JUBILEE IN SOUTH AFRICA.—As Governor-General of the Union, Lord Clarendon has initiated a Jubilee fund to be devoted to the combating of tuberculosis in South Africa.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

AT a meeting of this society, held in London on May 9th, Dr. NEIL BEATTIE read a paper entitled

Individual Psychology and Preventive Medicine

Preventive medicine, he said, had already made immense contributions to the national health by its attention to environmental hygiene. But the realisation that health meant wholeness, "the integration, unity, and harmonious working of the complete individual," gave a wider and deeper significance to the function and purpose of the health services and of medicine generally. Mechanistic medicine was concerned with the treatment of diseased organs, but the higher form of medicine—human or philosophical medicine—regarded the patient in his entirety, not as a physiological machine but as a human being with a soul. The development of the infant body depended on wise care and feeding; but the growth and development of the infant soul depended primarily on its contact with mother or nurse. The failure to establish satisfactory contact with another human being was the cause of an egocentric or subjective attitude towards life; the possessor of this life-style grew up with an unreal, unalive personality and often "needed his fellow human beings only to exploit them." The reality of life, here on earth, was in Adler's view the solving of the problems of comradeship, work, and love; and the person who was living a complete, wholesome, and healthy life was he who had successfully solved this triple task. An egocentric life-style prevented a courageous approach towards reality; and since the self-centred person was always concerned with the preservation of his own ego, stress of circumstances frequently compelled him to take refuge in psychoneurosis, psychosis, delinquency, and even actual physical illness. While the medical technician merely treated a diseased organ, the educated physician knew that, in addition to such treatment, the patient frequently required to be set free from the fear of himself—that is to lose some of his egocentricity by the development of social feeling and courage.

The real purpose of medical education was the production of an educated physician; and this could only be achieved by showing the student how to understand and know himself, setting him free from the trammels of mechanistic medicine. The greatest contribution to human medicine, said Dr. Beattie, would be made by the influence of the properly educated family physician upon diseased bodies and souls. An even greater duty was associated with the real function of the doctor in the homes of the people, as a teacher of the way of wholeness, completeness, and integration—that is, of health and freedom. The building of healthy houses was excellent and useful work, but it was the healthy *home* which produced healthy children and potentially healthy men and women. The root cause of ill-health, both physical and mental, frequently lay in disintegrated, unhappy family life; and it was for the medical profession to realise that in its hands rested much of the cure and still more of the prevention of national ills. Any medical man or woman who remained blind to the tremendous significance of the teachings of modern psychology to the science and art of medicine was in great need of the help of the very branch of medicine which he pretended to despise, and of which he was really afraid.

REVIEWS AND NOTICES OF BOOKS

Medicine and Mysticism

By R. O. MOON, M.D., F.R.C.P., Consulting Physician to the National Hospital for Diseases of the Heart. London: Longmans Green and Co. 1934. Pp. 57. 2*s.* 6*d.*

Dr. Moon in reviewing the history of medicine, sees in its progressive advance through the last century, a development of the scientific spirit, with a comparative disregard of mystical influences. The great progress that has been made, has been largely due to the use of the inductive method enunciated by Bacon and carried into practical activity by Harvey, and other leading spirits of science. The tendency on the part of mysticism, particularly its oriental expression, has been to disregard the body or, at least, to accept it merely as a vehicle for the expression of the spiritual world. Dr. Moon states that science and mysticism "would both seem to be means of revealing truth but their method of procedure is strikingly different, the two psychic tempers are alien to one another."

If, however, one reviews the history of medicine particularly during the centuries of the Renaissance—as Dr. Moon does in a most illuminating fashion—we see that medicine and mysticism have by no means been divorced from one another either in theory or in practice. The influence of Plato and of Neo-Platonism in many ways had as profound an influence on the minds of certain medical thinkers as had the teachings of Aristotle upon others. In fact there were some such as Ammonius Saccas who attempted to profit from the teachings of both schools and to colour both with oriental mysticism and with Christianity. The ultimate goal of many thinkers was the pursuit of motionlessness—i.e., of "The One," rather than of thought, which is a form of motion and activity. Mysticism in medicine must be regarded as an attempt to see the universal in the particularity of bodily phenomena, and it is only by appreciation of the fundamental spirit from which life derives that bodily function and disease can be correctly understood.

It is surprising to what extent the Pythagoreans and the Orphics have influenced the thought of Europe and permeated the systems of medicine. Dr. Moon cites the well-known doctrine of the "Critical Days" which played an important part in the writings of Hippocrates and Galen, and which seemed reminiscent of the mystical properties that Pythagoras attached to numbers. Galen, Raimond Lull, and Paracelsus, Agrippa of Netterhein, and Van Helmont were all influenced by mystical doctrines, and even Harvey himself was not entirely immune from a mystical tendency in his interpretation of organic behaviour. Hahnemann was in the line of succession of Paracelsus and his homeopathy was a dynamic conception of drugs as containing spiritual powers which were brought to life during the rubbing together of chemicals in the pharmacist's mortar.

In our own time mysticism has attempted to oust medicine from its rôle of healer of disease, in the rebirth of the doctrine of faith-healing as expressed in Christian Science. Perhaps the only true mating of mysticism and medicine has come with the development of psychopathology, a fact which the author has failed to mention. There are some who would no doubt condemn psychopathology on this account. But the discovery that many disorders of function, not only of the mind but of the body too, are occasioned by deep instinctual urges which are at one with the vital impulse itself, proves that the philosopher physicians of the Middle Ages and the Renaissance were struggling in a diffused light, which has been focused to-day upon both mental and physical disorders in such a way that the scientific approach can make use of a mental philosophy without a loss of prestige.

We commend Dr. Moon's work to the increasing number of medical men interested in the making clear these fundamental problems.

Researches on Tropical Typhus

A Study of the Bacteriology, Serology, and Epidemiology of the Disease. By LUDWIK ANIGSTEIN, M.D., Ph.D., Parasitologist to the State Institute of Hygiene, Warsaw, Poland; Lecturer in Parasitology, University of Warsaw. Kuala Lumpur: Kyle, Palmer and Co., Ltd. Pp. 184.

TYPHUS is a world-wide disease and appears invested with distinctive and peculiar characteristics in the most diverse climates and under the most diverse conditions. It would be difficult to find an investigator better qualified to study this disease in its entirety than Dr. Ludwik Anigstein. After experiencing epidemics of typhus exanthematicus during the war, he was appointed to the State Institute of Hygiene in Warsaw and there had further opportunities of observing the disease from a laboratory point of view. Since 1929 Dr. Anigstein has been investigating tropical typhus in Malaya. In an exhaustive comparative study of the puzzling natural history and serology of old world and tropical typhus he has been able to prove that the human body louse does not play any part in the transmission of tropical typhus in Malaya, although it was determined by Weigl's ingenious method of intrarectal inoculation, that the virus multiplies in the gut of the arthropod and is fatal to it. The rat *R. rattus diardi* is undoubtedly the reservoir of infection in Malaya, and examination of the smear of the affected tunica vaginalis of infected rats showed rickettsia-like micro-organisms in great numbers. The main results of this excellent piece of research support the contention of W. Fletcher and J. E. Lesslar (1925) that there are two types of typhus: the K or "scrub" type—which is the same as tsugamushi disease—and the W or urban type.

Laboratory Medicine

A Guide for Students and Practitioners. Second edition. By DANIEL NICHOLSON, M.D., M.R.C.P. Lond., Assistant Professor of Pathology, University of Manitoba. London: Henry Kimpton. 1934. Pp. 566. 30*s.*

THE author has succeeded well in his aim to provide in detail, for medical students, information on the indication, method, and interpretation of diagnostic tests that would prove most suitable when they later engage in practice. The indications for the performance of any particular investigation are clearly stated and the interpretation is explained on the basis of general principles. Actual accounts of technique are confined to those procedures which the student may himself have to use in the course of his future career as a medical practitioner. It is a particularly valuable feature of the book that clear and detailed descriptions are given of the sort of specimen required for any particular investigation, and of the mode of collecting it. The unsuitable specimen is the bane of the laboratory worker. The medical practitioner who sent a blood smear in to his local laboratory with a request for the performance of a Widal reaction constituted an extreme example of a common type of error; others to our knowledge have expected a useful reading of the blood-sugar from an oxalated specimen, and of the blood-urea from one treated with fluoride. Readers of Dr. Nicholson's book will know better than this. It is significant of the march of clinical pathology that the author concerns himself not only with the examination of the specimen but also with its collection. Some of his hints are valuable—for example, to pass the Ryle's tube through a cocainised nostril rather than by the mouth. Clear details are given not only of the technique but also of the results to be looked for in such tests as the Schick, the Dick, and the Schultz-Charlton, which fall equally within the sphere of the clinically conscious pathologist and the pathologically minded clinician.

In the present edition fairly recent procedures such as the van Slyke urea-clearance test and the Aschheim-Zondek test for pregnancy find a place; the author describes the Friedmann modification, in which rabbits are used, to the exclusion of the original mouse method. The short section on water metabolism constitutes one of the most valuable in the book; it deals with an aspect of medical treatment too frequently neglected in this country. This section is not concerned with work at the laboratory bench; no single "test" or "reaction" is described, but everyone training for or engaged in the practice of medicine will find it profitable to ponder it.

Elementary Microtechnique

By H. ALAN PEACOCK, M.Sc., Head of the Biological Department, Cheltenham Grammar School. London: Edward Arnold and Co. 1935. Pp. 200. 5*s.* 6*d.*

THIS little book will be welcomed by many teachers of elementary biology. It sets out in a clear fashion the theories underlying microtechnique, of which more advanced students are often ignorant. The subject matter is so arranged and tabulated as to make it a useful book of reference.

The 1934 Year Book of Obstetrics and Gynæcology

Obstetrics. Edited by JOSEPH B. DELEE, A.M., M.D., Professor of Obstetrics University of Chicago Medical School. *Gynæcology.* Edited by J. P. GREENHILL, B.S., M.D., F.A.C.S., Associate Professor of Gynæcology, Loyola University Medical School, Professor of Gynæcology, Cook County Graduate School of Medicine. Chicago: The Year Books Publishers Inc.; London: H. K. Lewis and Co., Ltd. 1935. Pp. 717. 10*s.* 6*d.*

THIS small volume contains a mass of information, much of which is not to be found in standard textbooks. The original work published during the year has been summarised under appropriate headings, and the commentaries supplied by the editor are valuable and delightful. Prof. DeLee is occasionally terse and sometimes almost rude, but he gives the reader the unbiassed view and experience of one whose life has been devoted to obstetrics. What would otherwise be no more than a catalogue of recent work is converted to a stimulating review. The author's comments on the causes of maternal mortality and morbidity, and on the use of analgesic and anæsthetic drugs in midwifery will be appreciated by anyone who practises obstetrics. Gynæcology is dealt with by Prof. Greenhill in an exactly equally robust manner, and the probable success or inherent futility of any new treatment or investigation is ruthlessly assessed. The whole volume is by definition thoroughly up to date and the selection of material for inclusion is excellent.

This original and outspoken work deserves attention. For those who practise obstetrics there is practical guidance, for those who teach a commentary on their dogma, for those who learn direction for their thoughts, and for all an absorbing account of the changes that have occurred during the last three decades in the art and science of obstetrics and gynæcology.

The Problem of Mental Disorder

A Study undertaken by the Committee on Psychiatric Investigations, National Research Council. Edited by MADISON BENTLEY, Sage Professor of Psychology, Cornell University; and E. V. COWDRY, Professor of Cytology, Washington University. London: McGraw-Hill Book Company, Ltd. 1934. Pp. 388. 24*s.*

THIS book gives an excellent conspectus of the present state of psychiatric research. The outlook is optimistic but critical. The editors, with the support of the Carnegie Corporation, collected the views of the foremost workers in psychiatry in the United States. In the first section of the book current thought is presented by clinical authorities: Prof. C. Macfie Campbell and Dr. A. Myerson represent the general psychiatrists; Dr. I. S. Wechsler, Dr. Adolf Meyer, and Dr. L. S. Kubie the neurologist, the psycho-biologist, and the psycho-analyst respectively. All are temperate, all are distrustful of glib explanation. Their bias is, of course, medical; they refer always to clinical problems and look forward to therapeutic application of discovery. It is recognised throughout the work how little relevance treatment has at present to theory and to "sound and sufficient knowledge of the human organism, of its history, of its physiological and psychological operations, and of its devious and complicated career from birth to death among physical, domestic, and social hazards." Each of these contributors indicates the lines of research which he thinks fruitful.

The various sciences which must supply the assured basis of psychiatry are reviewed in the second and larger part of the book. Neural mechanisms and functions come first. Dr. Stanley Cobb deals with cerebral anatomy and physiology, Dr. George Bishop with the electrophysiology of the brain, Dr. E. Jacobson with the electrical measurement of activities in nerve and muscle, Dr. E. V. Cowdry with neurocytology, and Dr. Irvine Page with the chemistry and metabolism of the brain. After Dr. Wilder Penfield's contribution on cerebral neuropathology, and Prof. G. H. Parker's on phylogenetic aspects, Prof. C. Judson Herrick gives an exposition of the bearing of integrative studies on mental disorder. Problems of general biology and genetics are presented by Prof. H. S. Jennings, and of constitution by Dr. Walter Freeman. Dr. R. G. Hoskins considers the rôle of the glands of internal secretion. The neurocytotropic virus diseases, such as encephalitis lethargica, are the subject of a paper by Dr. E. W. Goodpasture; Dr. George R. Minot writes on nutritional problems, and Dr. K. K. Chen on pharmacology. Prof. Madison Bentley has a long, plain-spoken, and informative chapter on general and experimental psychology relative to the problems of mental disorder, in which he sketches the lines of profitable research; it is followed by a brief paper on the psychological avenues of approach to schizophrenia by Mr. D. Shakow, and by another on the psychoneuroses from the standpoint of the clinical psychologist by Dr. Joseph Jastrow. The comparative psychopathology of infrahuman primates is set forth by Dr. R. M. Yerkes and Dr. Ada Yerkes as an aid to the study of human beings. The sociological aspects of mental illness are presented by Dr. Mandel Sherman and Dr. Irene Sherman, and Prof. A. L. Kroeber writes on cultural anthropology. A chapter on education by Dr. Leta Hollingworth ends the book, except for the comments and reflections of the editors.

The book is valuable, not as an account of what we now know, but as a reminder of the many ways in which we may hope for illumination of our present ignorance; it is also a warning against the slipshod casuistry which has at times threatened to hold the psychiatric stage.

L'âge critique

Étude Pathogénique et Clinique. By G. MARAÑON. Professeur a la Faculté de Médicine de Madrid. Paris: Libraire Félix Alcan. 1934. Pp. 333. Fr.40.

THIS, the French translation of Prof. Marañon's Spanish treatise, is a complete account of the climacteric as it occurs both in the male and female. Information dealing with this important and common period of life can only be obtained, as a rule, from a search in works on endocrinology, gynæcology, physiology, or the like; but here in one volume is the latest knowledge available. Marañon considers that the climacteric is, as a source of illness, neglected and, by the medical profession as a whole, not treated with the respect and attention that it deserves. Six chapters are allotted to the action of the ductless glands and the symptomatology is divided according to the effect on the various systems of the body. These aspects have been considered at length, and it is most disappointing to discover only 17 pages allotted to the difficult question of treatment. As Prof. Marañon has evidently acquired a complete grasp of the subject we may hope he will consider enlarging this chapter of his most interesting book to at least ten times its present size in a future edition.

Urology

Third edition. By DANIEL N. EISENDRATH, M.D., Consulting Urologist to the American Hospital, Paris; Assistant Professor of Surgery (Genito-Urinary), Rush Medical College of the University of Chicago; and HARRY C. ROLNICK, M.D., Clinical Professor of Genito-Urinary Diseases, Loyola University Medical School. London: J. B. Lippincott Company. 1934. Pp. 942. 42*s.*

THE practitioner who reads this book or even glances through it, examining the illustrations and reading the headings, will find that with a minimum of trouble he has brought his knowledge of urology up to date. In this third edition the authors have incorporated all the advances that have been made during the last few years. The most notable amongst these is the introduction of excretion urography; in their opinion it is the greatest development in urology that has taken place since von Lichtenberg and Voelcker introduced retrograde pyelography in 1906. The fact that the intravenous method is within the reach of those who are not expert in urological manipulations has established it as a routine method of examination for most lesions of the upper urinary tract. According to this book, excretion urography will supply the diagnosis alone in 30 per cent. of such cases and prove a valuable aid in at least 60 per cent. But although the technique is simple, considerable experience is required in the interpretation of results. Pyelograms of different types of pelves and calices are supplied so that the inexpert may have a working knowledge of the wide variations within normal limits.

Another advance of the last few years has been the introduction of perurethral methods of treating prostatic and bladder neck obstruction. New sections have therefore been added on transurethral electroresection of the prostate and bladder neck. Whilst recognising the place of these newer methods, the authors adopt a somewhat conservative attitude towards them. They point out that, although surgery carries with it the danger of shock to the debilitated patient, intra-urethral manipulation may sometimes produce even greater shock. Especially is this so if instrumentation has been prolonged. Resection, therefore, should be carried out as rapidly as possible and be restricted to cases that come within its scope. Another important addition to the work is in the chapter dealing with renal calculi, where new paragraphs are devoted mainly to the differential diagnosis of renal from gall-bladder shadows.

The distinguishing features of this work are clearness of expression, appropriate classification, and profuse illustration, all qualities of vital importance in a book intended for purposes of rapid revision.

Blood Groups and Blood Transfusion

By ALEXANDER S. WEINER, A.B., M.D. London: Baillière, Tindall and Cox. 1935. Pp. 220. 18*s.*

THIS book contains little that has not already appeared in the works of Schiff, Steffan and Lattes. It offers in English a competent survey of the present state of knowledge in regard to the blood groups and will be of value to those to whom for linguistic reasons the original sources are not available.

Chirurgie du pancréas

By P. BROCQ, Professeur agrégé à la Faculté de Médecine de Paris, Chirurgien des Hôpitaux; and G. MIGINIAC, Professeur à la Faculté de Médecine de Toulouse. Paris: Masson et Cie. Pp. 427. Fr.75.

DISEASES of the pancreas do not loom big in the practice of the ordinary general surgeon. Although some chronic inflammatory conditions are probably more common than they are generally recognised to be, taken as a whole affections of the pancreas amenable to surgical measures are rather rare. Prof. Brocq and Prof. Miginiac have made of this organ a special study. Dr. Brocq has already written one of the best monographs on acute pancreatitis in existence; the scale and extent of his investigations are shown by the fact that the account of acute pancreatitis in this book is based upon clinical reports of no less than 468 cases. With the same thoroughness the other diseases of the pancreas have been investigated, analysed, and presented in a form easy and interesting to read, with numerous drawings and microphotographs.

This authoritative book can be recommended to all surgeons. It brings our knowledge of the pathology, treatment, and prognosis of pancreatic diseases up to date, and is the kind of work which certainly will not lie unconsulted upon the shelf.

NEW INVENTIONS

AN IMPROVED PORTABLE ORTHOPÆDIC APPARATUS

BY A. G. ORD, F.R.C.S. Edin.
HON. SURGEON, ROYAL HOSPITAL, PORTSMOUTH

SOME years ago I designed a portable orthopædic apparatus for use in manipulative and operative orthopædic practice; it has, I believe, been widely employed and its usefulness been unquestioned. But it had serious disadvantages, among them being: (1) it was heavy and cumbersome; (2) there was inability to secure X ray photographs of the legs from above and below with the patient in linear extension, and inability to extend the hip-joint or flex the knee-joint; (3) the head and body supports were difficult to adjust as their shape and design did not permit either of raising or lowering the head or applying shoulder spicas; and (4) there was no provision for arm extension. These are the difficulties which I have endeavoured to overcome by redesigning the whole apparatus so that it should offer better and additional facilities.

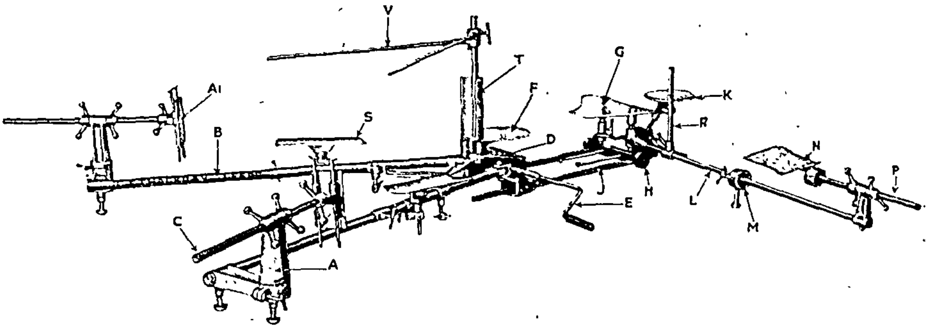

FIG. 1.—Shows the complete apparatus assembled, fitted with the arm extension.

The improved apparatus, like its forerunner, is made of aluminium, gunmetal, and steel, fits neatly into a specially constructed box measuring 37 in. by 21 in. by 11¼ in. The total weight when packed is 100 lb., of which the actual apparatus weighs 61 lb. only.

The improved apparatus is shown assembled in Fig. 1. The foot pieces (A) have been cranked out from the extension rods (B) to permit X ray photographs with the legs in linear extension; this also permits an extra adjustment allowing extension of the hip- and knee-joints, also an extra degree of abduction. The foot pieces can be rotated for eversion and inversion of the foot. Each foot piece is fitted with an improved type of foot plate (A1) and the extension screws (C) are now 18 in. long with quick travel threads. The combined pelvic support (F) and perineal guard (T) in two sizes is a new design and fixed at an increased distance from the central casting (D) to give more room for spica plasters. Overhead rods (V) are for maintaining flexion of knee when required. The pivot points of the hip-centring mechanism are now adjusted by a long crank handle (E), interchangeable for either side and also operating the moving racks (J) of the body support (G). Leg supports (S) have been remodelled and are instantly adjusted by an ingenious screw for height or distance. The body support (G) is an entirely new design. It is anatomically designed to the shape of the shoulders and is adjusted backward or forward by the crank handle (E) for different trunk lengths. The two small wheels (H) on its upright supports and the moving racks (J) make this adjustment rapid and easy when the patient is in position. Its greatest use is for the application of plaster spicas as the support can be quickly withdrawn after bandaging. The head support (K) is also a new design. It is saucer-shaped to conform to the contour of the head, provides complete immobilisation, and can be raised and lowered at will by adjustment of a swivel screw. Independently supported, it gives increased stability.

The arm extension (L) is an entirely new fitting, and can be used for either arm. The ball-and-socket movement (M) allows flexion of the arm. The hand plate (N), fitted with slots for bandaging, is also provided with ball and socket for dorsiflexion or volarflexion. An extension screw (P) gives extension in conjunction with an upright adjustable rod (R) for counter extension. I have found the arm extension invaluable for high fractures of the surgical neck of the humerus, the head of which is fixed with an awl, the arm extended and subsequently abducted. This manœuvre reduces the fracture which is at once fixed by a spica or other method. The ball-and-socket movement on the hand plate provides internal and external rotation of the humerus and pronation and supination of the elbow. Radial and ulnar flexion of the wrist-joint is also possible. Fig. 2 shows a patient in position on the apparatus with the limbs in abduction, right leg in extension and left leg externally rotated to give additional extension of the hip. Special spats it will be seen are used for extension. I have found these leather extension spats to be an immense improvement on bandaging the feet to footplates.

A special canvas stretcher has been devised which can be used with carrying poles if desired. The hooks and eyes of the original model have now been replaced with a modern type of zip fastener. After the patient has been placed on the stretcher the zip fastener can be opened, when the flaps can be completely opened back.

The improved apparatus has been made by Messrs. Chas. F. Thackray, Leeds, to whom I am much indebted for the able manner in which they have carried out my suggestions.

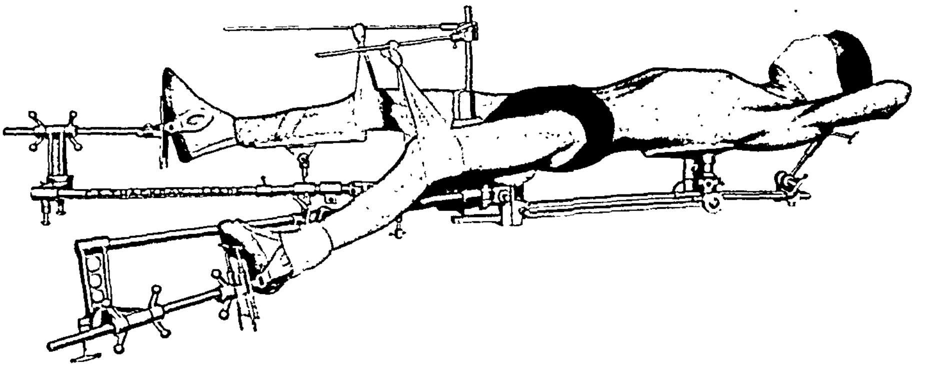

FIG. 2.—Shows a patient in position on the apparatus, with limbs in abduction, right leg in extension, and left leg externally rotated to give additional extension of the hip. Note special spats used for extension.

THE LANCET

LONDON: SATURDAY, MAY 25, 1935

RESEARCH IN PSYCHIATRY

THE study of mental disorder is just emerging from an unhappy phase of its development. Much neglected and over-simplified, it had become a centre of polemics about method and interpretation before its problems were defined. Available facts were ignored, and available methods contemned; partisan feeling stood in the way of fruitful research; argument took the place of demonstration, and the plausibility of a hypothesis was more important than its verification. The causes of all this are not altogether obscure. Psychiatry embraces conditions ranging from gross madness to inconspicuous peculiarities of disposition, and it is not easy for any one man to become familiar with the whole of this range of material. In England, indeed, it was almost impossible in the early years of this century until HENRY MAUDSLEY's plan was made actual after the war. There was no psychiatric clinic providing the means for acquiring such familiarity—no acknowledged centre of research and clinical experience which should be normative and materially disinterested. The problems of psychiatric research, moreover, proved to be not only complex but in some ways alien to medical modes of thought. Scientific methods profitably applied elsewhere in medicine seemed in the main sterile here beyond a certain point, while newer scientific methods appropriate to this study were not brought into touch with living clinical psychiatry. For one novel mode of approach, the psycho-analytical, undue claims were made. A study, such as that of psychiatry, which seemed to be vague, contentious, and scientifically stagnant, did not draw many workers trained for research. Many psychiatrists thought of the subject in terms of a false antithesis; description or investigation, custody or treatment, understanding or diagnosis, psychiatry or medical psychology: these were the spurious watchwords which darkened counsel. Groups of physicians espoused causes to an extent obsolete in other branches of medicine. It was asserted on the one hand that the only fruitful line of investigation was that which could be carried on in the consulting-room and was indistinguishable from treatment; others were equally confident that only in the laboratory, and without any use of the clinical worker's body of knowledge, could advance be looked for.

In medical practice many of these views and turmoils still persist. But in research that phase is almost done with; there is now more activity and less casuistry, more suitable choice of methods and not so much of the "get rich quick" attitude. Attempts are being made along many convergent lines to clear up the obscurity about these illnesses, these disturbances of harmony within the organism as well as between it and its environment. So a survey, reviewed elsewhere in this issue, of the outlook for research in psychiatry, which is sponsored by the Carnegie Corporation and the National Research Council in the United States, is timely. The editors have enlisted a most distinguished group of psychiatrists and other investigators to examine the prospects for research. Those among the contributors who are in touch with the clinical material are of like mind with Sir THOMAS LEWIS in their insistence that the research must start from the actual problems of disease and must return thereto, though the methods be borrowed from other sciences. Research in psychiatry by those who know nothing of psychiatry is apt to be fruitless because irrelevant. Here questions of organisation and more particularly of training arise; even the representative of the psycho-analysts in the symposium considers that the most serious handicap to the progress of knowledge lies in the "totally inadequate training" which many psycho-analysts have had in the associated fields of neurology and psychiatry, as well as in their own special discipline. The supporting sciences must be the means of fresh advance and the guarantee of its stability. Some of them deal with minute observations, others with the coördination of large bodies of fact. The former are the more precise, the latter the more significant, but the division is not sharp; all find their place in the framework. There is the physiology of neural mechanisms and functions, which may be concerned with electrical, chemical, structural, integrative, or embryological aspects of this complicated apparatus. There is the *biological* study of heredity and constitution, now continually freshened by discoveries in the non-human field. Special methods of investigation have been developed in pharmacology, in work upon nutrition, upon viruses, and upon the endocrine system, which can be applied here. Psychology, formerly remote and sterile, is no longer an armchair pursuit or arid scheme, but a well-based, manifold, growing branch of experimental science, averse from loose speculation and distrustful of the haze that sometimes passes for "medical psychology." It is itself relevant to psychiatry and contributory to further knowledge; psycho-analysis is only one of its branches, and an uncertain one. From the behaviour of infra-human primates, moreover, as from the data of cultural anthropology, psychopathology is likely to be fructified. Man must be studied in his social setting by psychiatrists, for maladaptation is the very touchstone of mental disorder. Sociology, statistics, and education are invoked for their contributions, enormously valuable so long as statistical and other controls are rigorously brought to bear on them.

These are not merely hopeful fantasies, but records of present activity. The results are still few because the problems are unusual and difficult. [illegible] results as have been established can only to a limited extent be translated, as yet, into treatment and prevention, is not astonishing. Psychiatry, as one of the most complex problems in biology, cannot hope to be exempt from the patient labour that must precede before even a limited mastery over complicated forces is attained.

INSURANCE CLAIMS AND ACCIDENT CASES

THE facts that are coming to light about the economic aspect of the treatment of patients who are the victims of accidents have a deep significance for the community. Orthopædic surgeons have for years been urging the importance to patients and employers of efficient treatment in the avoidance of permanent disability; their success has been marred, partly by inefficient organisation in most hospital centres, and partly by lack of financial support. It seems that it must now be only a matter of time before the insurance companies awake to the fact that they are paying out in compensation for time off work and for permanent disability sums out of all proportion to the amounts they would expend in directly financing, in part at least, the treatment of their clients by efficient methods. The State of New Jersey, U.S.A., has found this out and, as we have noted in a recent article (THE LANCET, April 6th, p. 817), taken appropriate action. The same lesson is to be learnt from the report of the working of the Accident Hospital in Vienna, for the building, equipment, and running of which the national insurance companies are responsible. LORENZ BÖHLER in the fourth edition[1] of his "Treatment of Fractures," now available in an English translation, deals in an addendum with the economic aspect of fracture treatment.

All those whose work has to do with accident insurance would do well to read Prof. BÖHLER'S book and learn such facts as this. In the year 1929 the maintenance cost of the hospital was 396,000 Austrian schillings. The saving on total compensation paid to 124 cases of fractures of the long bones treated in the hospital during that particular year, as compared with the compensation that would have been paid to the same cases in 1911, was reckoned at 370,972 *sch.* The figures tell the story plainly, especially when it is pointed out that, as well as these 124 fracture cases, 6000 other patients were treated in the hospital for the total maintenance of 396,000 *sch.* Two types of accident particularly interest insurance companies in general—viz., industrial accidents coming under the Workmen's Compensation Act, and third-party accidents on the road. It is the problem of the injured workman that has been the particular concern of the Austrian insurance companies. An impoverished country could afford neither the economic waste of having thousands of its workpeople attending physical therapy clinics for months or years when they might be usefully employed, nor the vast sums expended annually in compensation. In our country insurance against road accidents has added to the already very great financial interest of insurance companies in the correct treatment of accident cases. If, as seems possible, the cost of repairing injury to the person as well as to the vehicle in every accident is eventually covered by insurance, the problem will loom even larger. As it stands now, the hospital bill in certain claims only is met by insurance, while more often than not the surgeon's work is done for nothing. As Prof. HEY GROVES puts it,[2] "the car is paid for, but the patient's bones have to be mended as a matter of charity."

There are three types of personal injury in which skilled attention, from the first reception of the case at an accident clinic to its final discharge, are of great importance. These are fractures, especially of the long bones and of the spine, tendon lesions, and injuries of the hands. Prof. BÖHLER quotes figures which emphasise the economic importance of the last-named. In 1911 the Workers Accident Insurance Company in Vienna paid in compensation for fractures of the long bones 2,875,418 *sch.*, and for 2905 injuries of the fingers 3,859,466 *sch.* Every open wound of the hand, and every injury to the tendons, is a potential cause of crippling, and in any worker using his hand for skilled labour a potential claim lies for permanent loss of work. Yet the casualty department of a hospital, in charge of an officer without mature experience and not necessarily with any special skill in accident work, is usually considered a suitable place for the treatment of these cases. This is the accepted procedure in this country; BÖHLER'S plan is for the doctor who first deals with the case to be responsible for the treatment throughout, and even to write the final report, thus verifying the success (or otherwise) of his treatment. This seems reasonable, but it necessitates the placing of accident clinics in charge of paid officers who are skilled at the work, and some of whom at least must be on a full-time basis. The money needed to organise such clinics is at present being wasted on unnecessarily prolonged treatment, and in large sums for permanent disability. The victim of a Colles's fracture of the wrist, for example, can be back at work in about one quarter of the time if efficiently treated throughout and, according to figures quoted by HEY GROVES, the average percentage of permanent disability can be reduced from 23·6 to 0·4. It has been objected to the organisation of such clinics that pressure could not be put on insured persons to use them. No compulsion is exercised in the Viennese hospital and yet the scheme has been a success. Workmen insured by the company have the right of treatment at the hospital, but they are not forced to attend there. The building and equipment of the hospital, including the provision of X ray plant and other apparatus, cost £10,200. If the insurance companies concerned in the payment of accident claims were convinced that the cash saving for time off work, for prolonged treatment, and for permanent disablement was as material as in fact it would appear to be, the proper organisation of accident treatment would soon be put on a sound basis in this country.

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[1] Reviewed in THE LANCET, April 27th, p. 992.

[2] Brit. Med. Jour., April 20th, p. 813.

MALARIA AND RACIAL EXTINCTION

From time to time historians have invoked the spread of malaria to explain the decline of human populations. Usually the changes in question have taken place so long ago that this hypothesis is not susceptible of proof. But on another page of this issue will be found a remarkable paper by Dr. A. J. Copeland which contains evidence that within the last few years certain of the peoples in North Borneo have begun to fall victims to this fate. There are two native races in North Borneo, each numbering rather less than 30,000: the Dusuns, an agricultural, rice-growing people, inhabiting the more open higher lands; and the Muruts, who inhabit the jungles at lower levels and live mainly by hunting. Whereas the Dusuns are on the whole a thriving race whose numbers are on the increase, the Murut population has been falling steadily during the past eight years, and Dr. J. G. Campbell is quoted as stating that "unless given systematic and energetic medical aid" this race is "doomed to slow but inevitable extinction." The decline of the Muruts is ascribed by Copeland to malaria. The village headmen state that there have been more cases of fever in recent years; there have undoubtedly been extensive clearances of jungle; and the imported Javanese labourers are believed to have brought with them strains of malaria parasite, particularly subtertian strains, to which the Muruts are not accustomed.

A prima-facie case is made out in favour of this view. It is regrettably true that after all these years new land in the tropics is still recklessly opened up by planters or engineers without consulting the malariologists; and thereby their employees and the local population are often needlessly exposed to malaria. There are, however, some missing links in Dr. Copeland's chain of evidence which must be filled in before his theory can be regarded as fully proved. The official vital statistics which he quotes, showing death-rates as low as 14 or 15 per 1000, can hardly be taken as accurate. And then it is generally believed, though the relevant facts are extraordinarily hard to obtain, that hyperendemic malaria reduces the population by causing heavy infantile mortality; whereas Copeland seems to attribute the reduction in the numbers of children chiefly to a lower birth-rate. Nor is there any evidence, though it is certainly likely, that recent clearances have in fact favoured the dangerous species of anophelines. The decrease in native populations is often due to subtle influences of an imponderable psychological character. Some races seem unable to thrive in contact with advancing civilisation; and this inability is apt to be more pronounced in a hunting than in an agricultural people. Such a failure of adaptation is the most probable cause of the decline, for example, of the Sakais of Malaya.

Dr. Copeland's thesis is nevertheless suggestive, and clearly demands examination. His paper gives a vivid picture of how medical work is carried on by a sympathetic medical officer among primitive peoples, and it incidentally illustrates once more the propagandist value of yaws treatment in popularising western medicine. To improve the malaria situation he encountered he proposes the wholesale distribution of quinine, and certainly the present issue is hopelessly inadequate; but it would be unduly optimistic to expect native villagers to take enough quinine to eradicate the disease. However popular the remedy, quinine treatment would have to be associated with a study of the mode of life of the Muruts, with a view to inculcating habits of clearing, housing, and living which will do something to preserve them from malarial infection. And it is to be hoped that Dr. Copeland's observations will stimulate the Government of North Borneo to undertake work along these lines.

ANNOTATIONS

INSTITUTE FOR MEDICAL RESEARCH, OXFORD UNIVERSITY

The statute establishing an Institute for Medical Research at Oxford, recently approved by Congregation, represents the latest development of a scheme which had its origin about five years ago. At that time Lord Nuffield—then Sir William Morris—bought the whole of the Observatory grounds and buildings from the Radcliffe Trustees for the sum of £100,000 and handed them over to a body of trustees, called the Morris Trustees, for the joint benefit of the Radcliffe Infirmary and the university medical school. It was indicated in the trust deed that the greater part of the land was to be used for the needs of the infirmary and for such extension of that institution as from time to time might become necessary. On the other hand, the Observatory buildings, the Observer's house, and a considerable area of surrounding land was assigned to the university for the purpose of promoting clinical research. The trustees also had in mind the possibility in the future of a ward, devoted to clinical research, which could be brought under the general administration of the infirmary in regard to its upkeep and nursing, with the proviso that it should not become an additional expense nor a source of profit to the institution. In order that the university should take advantage of the opportunity and accommodation provided by Lord Nuffield's great generosity, a scheme for the establishment of a Medical Research Institute was drawn up by the board of the faculty of medicine. The university has shown its desire and willingness to assist the scheme officially by providing the sum of £1000 per annum until such time as the institute is sufficiently endowed to run on its own resources. The board of the faculty of medicine have agreed that a recent bequest amounting to £30,000, generously made to the university by the late Mrs. Theodore Williams, should be used for endowment, and there are smaller sums available from other sources. Lord Nuffield has shown his interest and further generosity by offering to help towards the expense of altering and equipping the Observatory building for its new purposes.

The Observatory buildings become vacant in June and it is intended to use them for two lines of research—namely, therapeutics and X ray cinematography. There has been little organised research in therapeutics in this country and no place where drugs used in medical practice can be subjected to independent and searching tests by pharmacological as well as clinical methods. It is hoped that Prof. J. A. Gunn, as director of the institute, with the facilities afforded by his pharmacological department and with the ready coöperation of the medical staff of the infirmary, will be able to fill many gaps in our knowledge of the action of drugs and to open new lines of advance in their clinical application. At first sight the connexion of X ray cinematography with therapeutics may not be obvious, but the former is a new scientific instrument which promises to throw light not only on clinical but on anatomical, physiological, and pharmacological problems. The recent developments of this technique by Dr. Russell Reynolds in London, and by Dr. R. Janker of Bonn in Germany, are indicative of its future value both in research and in teaching, and further progress may be expected from their exploitation in connexion with the sciences ancillary to medicine.

It may be justifiably hoped that the establishment of a medical research institute at Oxford, even though it begins in a modest way, will help to meet the generally admitted need for such units in this country. There are always a certain number of medical men and women who are drawn towards research in preference to practice, who spend some years in training for research, and who are obliged to desert it because there are open to them so few posts which give them the necessary facilities as well as an adequate stipend. There is every possibility, too, that this unit may encourage closer coöperation and more combined effort in attacking problems which are of common interest to the staffs of more than one scientific department in the university.

THE EFFECTS OF HOT CLIMATE

In a paper read to the Royal Society of Tropical Medicine and Hygiene last week Dr. D. H. K. Lee drew attention to the urgency of problems connected with the settlement of tropical countries by peoples unaccustomed to the climate. The physiological effects of the heat itself although of great importance were, he thought, imperfectly understood. Some idea of the causes of breakdown could however be gained by combining our knowledge of the physiology of temperature regulation with the signs and symptoms of certain non-infective tropical disorders and the particular circumstances accompanying their onset. In recalling the ways in which the body keeps its temperature constant, he mentioned one or two points which are frequently overlooked. The body can increase its heat loss by dilatation of the skin vessels, allowing greater opportunity for radiation and conduction, and by activation of the sweat glands, causing cooling by evaporation. Dilatation of the skin vessels means an increase in the systemic vascular bed, and is accompanied by an actual increase in the blood volume which draws on the water stores of the tissues. Effective perspiration, which is the more important cooler, also depends on a sufficient reserve of water. There is thus a definite link between dehydration and temperature control. The complementary method of keeping down temperature by reducing the amount of heat produced is effected not only by an involuntary decrease in muscle tone or voluntary abstention from muscular exercise, but also by a diminution of the activity of the thyroid, suprarenals, and sympathetic nervous system, whereby the basal metabolic rate is reduced. Less food is then required and artificial stimulation of appetite becomes inadvisable.

Physiological adaptation to the effects of heat may, according to Dr. Lee, break down at four points.

(1) *Hyperpyrexia.*—A certain raising of the temperature on exposure to heat is not unphysiological so long as there is time for the readjustment of equilibrium to meet the new conditions. A progressive unchecked rise is a sign of failure of adaptation, and the result depends upon whether artificial lowering of the temperature can be achieved before some vital tissue becomes damaged. Neuroglobulin is precipitated at 108° F.; something less than this may be regarded as the critical temperature. There are naturally many predisposing causes of hyperpyrexia, but inhibition of sweating would be by far the most powerful, and is in fact met with in many cases of "heat stroke." The symptoms are well known.

(2) *Circulatory failure* is encouraged by heavy meals, alcoholic indulgence, continued standing, and emotional disturbance—in fact, by anything requiring a considerable redistribution of blood in the already enlarged and adjusted vascular bed. The symptoms include fainting, nausea, dyspnœa, and exhaustion, and may be grouped as "heat prostration."

(3) *Electrolyte imbalance* (to whose importance Lieut.-Col. O. R. McEwen has recently called our attention) is seen chiefly as chloride loss, due to excessive sweating and the replacement of fluid by pure water. Symptoms occur when the serum chloride falls below 100 mg. per litre; they consist of painful muscle cramps often preceded by a day or two of general malaise. The treatment is the administration, intravenously if necessary, of sodium chloride, and prophylactically the daily output of this salt should not be allowed to fall below 3 grammes.

(4) *Super-dehydration* can only occur where water is unobtainable, and its effects are many. First the symptoms of circulatory insufficiency may appear, but are replaced by the more serious effects of direct deprivation of water in the various organs, and are often complicated by a rise of temperature.

Under each of these headings Dr. Lee presented a table correlating physiological effects with clinical manifestations; in each case the essential features of the syndrome are accompanied in lesser degree by one or more features of the other types of disorder. He has undoubtedly cleared the air by deriving certain principles from a mass of confusing and incomplete data, and his analysis should lend direction and impetus to the study of heat adaptation.

PSITTACOSIS

Despite an embargo on the import of parrots occasional cases of psittacosis have been occurring in this country ever since the subsidence of the 1929–30 epidemic. And the same thing has been happening elsewhere. In Germany, for instance, Fortner and Pfaffenberg[1] have reported nearly 150 cases during the first half of 1934—an incidence little different from that of 1930. Almost without exception these cases have arisen as the result of contact with budgerigars (love-birds), and although it is known from the work done in 1930 that the budgerigar can suffer from psittacosis and infect man, the disquieting thing about these recent outbreaks is that the birds responsible have seemed to be in good health. That an apparently healthy parrot, a carrier of the virus, can give rise to human infection was shown by the investigations of Bedson, Western, and Levy Simpson[2]; and it is also known that carriers of psittacosis virus occur amongst home-bred budgerigars (Gordon[3]). In a paper published in our present issue, Dr. Levinthal produces further evidence that man can be infected by apparently healthy budgerigars (virus-carriers) and that a proportion of home-grown stocks of these birds is infected. As he points out, the budgerigar is probably less susceptible to the virus of psittacosis than other species of the parrot family and when naturally infected tends to become a carrier rather than a frank case of the disease. He also suggests that during the 1929–30 epidemic, when infected parrots were broadcast throughout the country, many of the stocks of home-bred birds became contaminated and that the infection persists to-day. Whether this view is correct or not—and there is much to be said in its support—the fact remains that the home-bred stocks are infected and that cases of human psittacosis are occurring, though fortunately there are very few of them.

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[1] Fortner, J., and Pfaffenberg, R.: Med. Klinik, 1934, xxx., 787; Zeits. f. Hyg. u. Infektionskr. 1934, cxvi., 397.

[2] Bedson, S. P., Western, G. T., and Simpson, S. L.: THE LANCET, 1930, i., 315.

[3] Gordon, M. H.: Ibid., 1930, i., 1174.

Not only should the public be aware of the danger but the medical profession should be on the look-out for cases. Without going into the differential diagnosis, it may be said that psittacosis should be suspected wherever there is an acute febrile illness in a person who has to do with budgerigars, especially if it presents the picture of a toxic pneumonia. In endeavouring to reach a correct diagnosis the laboratory can help,* and though the virus is present in the blood stream during the early days of the disease and can be demonstrated there by mouse inoculation, the sputum is the material of choice. Virus is quite constantly present in the sputum and its presence there can be established by mouse inoculation. Unfortunately sputum is not always readily obtainable for its scantiness is a feature of the disease, but usually with a little patience a satisfactory sample can be procured. Failing the demonstration of virus in material from the patient, specific antibodies may be sought in the blood, making use of the complement-fixation test elaborated by Bedson.[4] In this connexion it must be pointed out that specific antibody is not always developed and never in large amount; and of course this complement-fixation test, like any other serological reaction, has not the same value as isolation of the causal agent. Another line of investigation which may provide valuable evidence is the attempt to demonstrate psittacosis virus in the birds with which the patient has been in contact. This should be done even though they seem to be in good health; but it should not be forgotten that the finding of psittacosis virus is nothing more than circumstantial evidence that the human case is due to the same agent.

Concerning the virus itself, Dr. Levinthal's paper does not perhaps carry us much further. He holds that he has established definitely that this virus is the true causal agent of psittacosis because he has grown it outside the body in tissue culture and produced the disease with culture virus. The observations are interesting, but it is arguable on the other hand that virus grown in cells in vitro is no more a pure culture than virus grown in the cells of a living animal (such as the mouse) which does not suffer spontaneously from psittacosis. Hence there is room for difference of opinion over the claim that he is the first to show that this virus fulfils the postulates of Koch. He also differs from Bedson and Bland,[5] and Bland and Canti [6] in interpreting the relationship which the different virus forms bear to one another, taking the view that the elementary bodies are capable of multiplication without necessarily passing through large and intermediate forms. Whether or not he is right it is impossible to say from the evidence at present before us.

BRITISH SOCIAL HYGIENE COUNCIL

A LETTER published in THE LANCET of March 23rd last from Lord Horder and a representative group of co-signatories sets out the urgent need of the British Social Hygiene Council for further pecuniary support on arrival at its twenty-first birthday. A frank statement at the last annual general meeting of the Council concerning its financial position, no less than Lord Horder's letter, has paved the way for a special appeal for money. The voluntary sources of the Council raised from previous appeals are exhausted, and the funds show a considerable annual deficit. Considering the great objects before the Council and the success which can be attributed to its work in many directions, it is sad to contemplate that its efforts may be compelled to cease through lack of pecuniary support. Lord Stanley of Alderley has come out as chairman of an appeal committee, stating that this is the first organised appeal made by the Council and that £100,000 are needed. The forcible argument in his appeal is that the present generation is paying for the ignorance of its parents, and that since 1914 the Council has striven, in behalf of the present and future generations, to mitigate the tragedies among us, to root out their causes where possible, and to exterminate the evil influences perpetuating them. Lord Stanley of Alderley writes: "Since 1914 the British Social Hygiene Council has helped to reduce such cases by 57 per cent., principally by preventive education to the parents of the future generations, and it can continue this work until Britain is cleansed of the scourge—if you will help." The replies to the appeal should be made to Lord Stanley of Alderley, Appeal Committee B.S.H.C., 17, Dartmouth-street, London, S.W.1.

With the letter of appeal a brochure is enclosed entitled "Safeguard the Youth of the Nation and protect the Next Generation." It is a graphic summary more particularly of the work already done by the Council as an outcome of the report of the Royal Commission on Venereal Diseases. It is pointed out that the social hygiene activities of the Council, by stirring up the public health conscience, should lead to the reduction not only of venereal disease, but of many other scourges. That active health policy needs an understanding of human biology is a plea for support of the Council that none can gainsay, and as a campaign in this direction the proceedings at the Seventh Imperial Social Hygiene Congress to be held on July 8th to 12th, 1935, should be of great practical value. The congress is under the direct patronage of the Minister of Health and the Secretaries of State for India and for Dominion Affairs, as well as of the President of the Board of Education and many high Commissioners from the dependencies. The subjects to be introduced by inaugural addresses or discussed in conference are the relations of the teachings of sex behaviour to religious ethics, modern experiments in the field of social hygiene, biology in relation to social welfare, and juvenile delinquency. Immediate social problems within the Empire form the theme of one of the sessions, while in others the latest advances in the treatment of venereal diseases and the problems met with in the teaching of biology will come up for consideration. Membership tickets for the Congress are issued at £1 each, and should at Carteret House, Westminster, the offices of the Council.

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* Material may be sent to Prof. S. P. Bedson, F.R.S., at the London Hospital, E.1, or to Dr. Levinthal at the National Institute for Medical Research, Hampstead, N.W.3.

[4] Bedson, S. P.: Brit. Jour. Exp. Path., 1933, xiv., 162.

[5] Bedson, S. P., and Bland, J. O. W.: Ibid., 1932, xiii., 461; 1934, xv., 243.

[6] Bland, J. O. W., and Canti, R. G.: Jour. Path. and Bact., 1935, xl., 231.

A summer school will be opened at Westminster College, Cambridge, from Tuesday, July 30th, to Tuesday, August 6th, the inspiration here being the following words in Sir George Newman's report for 1933, as chief medical officer of the Board of Education. Speaking of emotional training and sex education Sir George said: "It seems reasonable that, at the present day, some appropriate instruction and guidance should be provided before children leave school, either as part of elementary biology or hygiene or otherwise." The Council is endeavouring to carry out the ideas embodied in that sentence, and at the summer school at Cambridge, Sir Walter Langdon-Brown, regius professor of physic in the University, and Mr. Z. F. Willis, assistant general secretary, National Council of Young Men's Christian Associations, will be among the prominent supporters. Courses of lectures include a series by Dr. L. J. Bendit, assistant physician, Institute of Medical Psychology, by Dr. Grace Calver, physician to the children's department of that institute, and Mr. P. F. Lee, B.Sc., education officer, B.S.H.C. The fee for membership of the summer school is £1 1*s.*, and the boarding fee from tea-time on July 30th to lunch on August 6th is £3 10*s.* inclusive, or 12*s.* 6*d.* per diem for those who stay for shorter periods. All communications should be addressed to Carteret House, S.W.1.

MEASUREMENT OF ALLERGY IN TUBERCULOSIS

ALMOST 45 years ago Robert Koch observed that tubercle bacilli injected into a healthy guinea-pig produced results very different from those obtained when the bacilli are injected into a tuberculous animal. He followed this up by further experiments which showed that dead tubercle bacilli or bacillary products (which he afterwards termed tuberculin) acted in the same manner as the living bacilli. He did not give a name to this phenomenon, but seven years later Clemens v. Pirquet, following his classical study of vaccinia, called it "allergy." All the years which have elapsed since Pirquet suggested that the reaction was allergic have not been sufficient to exhaust the discussion which has arisen as to the significance of the reaction to tuberculin in the diagnosis of tuberculosis. Even to-day, while it is agreed that a reaction is evidence of sensitivity to tuberculous infection, there is no agreement as to the quantitative value of the test, nor as to whether it may be taken as an index of immunity. Thus we have been driven to assume that there is what may be called a "general population" reaction, but are left in the dark about whether there is a definite relationship between the presence and intensity of the reaction and the clinical process. Rich, Jennings, Rothschild, and others[1] have shown that desensitisation may be produced without interfering with immunity. In a lecture delivered in March, 1934, at the Lister Institute of Preventive Medicine, and later elaborated in four papers[2] by himself and Dr. A. V. Chwalibogowski, Dr. Fr. v. Gröer, professor of pædiatrics in the University of Lemberg (Poland), has taken up the task of coördinating the facts about allergy. He regards allergy as a dynamic concept determined by two variable factors: susceptibility (S) and reactivity (R), which are in complex relationship to one another. The allergic process can be represented as a function of the factors S and R.

Applying the intradermal tuberculin test in falling decimal dilutions, and measuring in millimetres the diameters of the resulting skin reactions, he found it possible to differentiate three distinct groups of cases, according to the behaviour of the skin response as the concentration of tuberculin fell. In Group I. the diameters (D) were inversely proportional to the negative index of the concentration, so that the product ($D \times -\log C$) remained practically constant (homodynamic allergy, interpreted as signifying an exact balance between reactivity and susceptibility, $S = R$). In Group II. the diameters do not decrease proportionally with the concentrations, so that the product ($D \times -\log C$) progressively increases (heterodynamic allergy of "pleoræsthetic" type, $S > R$); while in Group III. the diameters fall rather precipitately as the concentrations fall, so that the product ($D \times -\log C$) progressively falls (heterodynamic allergy of "pleoergic" type, $R > S$). Methods are given for obtaining values of R and S from the allergy curves.

Correlation of the clinical groupings with these numerical data, oft repeated throughout long periods of observation, led to the following findings. Clinical Group I. (tuberculin-positive, no specific symptoms) belonged without exception to the pleoergic type. Clinical Group II. (suspects without definite symptoms, or cases which have recently shown some signs of active tuberculosis but actually free) exhibited the homodynamic, while Clinical Group III. (manifest tuberculosis with tendency to amelioration and recovery) and Clinical Group IV. (clinically bad prognosis) exhibited the pleoræsthetic type of allergy. These two latter groups could be distinguished only by repeated estimations of R and S, which indicated in the one case a transition from the pleoræsthetic to the homodynamic or pleoergic, and in the other a still further progress towards the pleoræsthetic state of allergy.

The conspicuous advantage of Prof. Fr. v. Gröer's formula lies in the fact that it reduces two variables to one numerical product, thus avoiding the mental correlation of dose with reaction. Unfortunately, so far as his experiments show, these results are only reliable in children, although he is engaged on work which he hopes may lead to an equally exact system of measuring sensitivity in relation to clinical activity for adults. The theory has been worked out in 100 children, and Gröer remarks: "The full significance of the method would be apparent on following up the alteration of the allergic condition over a period of clinical observation. *It is not the statics, but the dynamics of allergy that is of prognostic value.*" He admits the necessity for assessing sensitivity in conjunction with clinical observation, particularly in relation to the blood picture and the sedimentation-rate of the erythrocytes. While claiming that his is the only system which will furnish this "measure" of clinical condition or its absence, he recalls the attempt of Ellerman and Erlandsen in 1909 to solve the same difficulties. Gröer's quantitative methods and their bearing on diagnosis and prognosis deserve, in our opinion, the careful consideration not only of tuberculosis specialists but also of all engaged in the study of allergic disease.

RADIOGRAPHY UPSIDE DOWN

CHANGES in the radiographic appearance of the lung when the patient is (so to speak) standing on his head are reported by C. Malpelli,[1] who thinks inversion of value in the diagnosis of pulmonary lesions. In the usual upright position, the lung tissue is distended by its own weight and this distension is greatest at the apex. In the inverted position, the relative opacity of the apex and base of the lung is altered, the former becoming more and the latter less opaque; at the same time the general distension of the organ is reduced, since its weight exerts traction chiefly on the diaphragm, which is elastic and deformable, instead of on the relatively rigid chest wall. Malpelli discusses the information obtainable chiefly in relation to the presence, extent, and stage of tuberculous lesions. A small exudative focus which escapes recognition in films taken in the normal position may, he holds, be revealed by inversion, the reason being that factors which make for increased opacity at the inverted apex are especially active in the diseased area. When collapse therapy is under consideration and the discovery of any disease in the contralateral lung is important, the method is said to be definitely helpful. An obvious objection is that the patient is obliged to be in an uncomfortable position when the pictures are taken, and it is doubtful if this would be practicable in any but the mildest cases.

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[1] Bull. Johns Hopkins Hosp., 1933, liii., 172, and 1934, liv., 232.

[2] Zeits. f. Kinderheilk., 1934, lvi., 379, 390, 631, 669.

[1] Atti e mem. della Soc. Lombarda di Med., 1935, iii., 229.

TREATMENT OF INGROWING TOENAIL

INGROWING toenail is one of those minor lesions that may lead to much trouble. After radical treatment by removal of nail and nail-bed the process of recovery may necessitate months off work, and involve no little discomfort. Among the causes H. S. Dolan[1] refers to trimming of the nails so that the corners are cut away; wearing of shoes that crowd the toes together; infection of the tissue adjacent to the side of the nail, which is already subjected to pressure and is unprotected where the nail has been pared; and (occasionally) trauma to the nail-bed, leading to deformity of the nail and its irregular growth. In the milder cases a cure may be wrought by getting the patient to wear the right shoes and cut the nails properly, steps being taken at the same time to harden and disinfect the granulating surface. For this last purpose Dolan advises that a small pad of absorbent cotton-wool soaked in tinct. ferri perchlor. should be worked in with a fine instrument beside the lateral margin of the nail, the process being repeated in two days' time. Where the infection is more severe, and the granulation tissue is heaped up over the margin of the nail, more drastic treatment is called for. Except in cases showing gross deformity and much pressure of the nail edges into the soft parts, Dolan does not advise complete eradication of the nail and nail-bed, preferring partial lateral removal of the nail and underlying bed, with removal of the granulation tissue at its edges. He operates with a tourniquet applied to the toe, and carries the incision downwards almost to the interphalangeal joint capsule of the distal joint. The healthy tissue outside the granulating area is undercut sufficiently to form a flap, and this is used to cover the raw surface left after excision of the strip of nail and nail-bed. Where complete removal of nail and nail-bed is required Dolan has been concerned to find a means of hastening the healing process, both because of the inconvenience and loss of time it involves, and because the slowly granulating surface is unpleasantly liable to infection, with a risk of osteomyelitis of the terminal phalanx. He does not altogether approve of the partial removal of the terminal phalanx, which was designed to allow the fleshy pad at the end of the toe to be sutured over the raw area. The disadvantages are that the end of the toe is left tender, and the toe is shortened. Dolan's plan is to do a more complete operation, dissecting up a flap over the base of the nail to ensure complete removal of all nail tissues; he then implants into the raw area a series of "pinch" skin-grafts, placed close together and lying on the periosteum. A layer of dry gauze holds the grafts in place, and outside this the toe is dressed with a thick layer of gauze soaked in paraffin. The operation is assisted by the use of a tourniquet. The patient returns for dressing on the day after operation, and is free of all discomfort after the second or third dressing. The gauze over the grafts is removed in 8–10 days, by which time the grafts have taken, and return to work is possible about a fortnight after operation. Dolan warns his readers against using local anæsthesia and a tourniquet in cases with definite infection. He thinks gas-and-oxygen is much safer, for injection of an analgesic may infect lymphatic channels, while the combined use of adrenaline and a tourniquet may lead to local sloughing.

KITCHENER SCHOLARSHIPS

THIS year 878 applications, representing 496 schools, were received by the scholarships committee, over which Sir James Currie presides, of the Lord Kitchener National Memorial Fund. Their task is to select from candidates, all of whom must be sons of officers and men who have served in H.M. Forces, those who show evidence of exceptional ability and have submitted a well thought out and precisely worded plan of training. The service of the applicant's father and the financial circumstances of his family are taken into consideration in the award of the scholarships, their value depending on the resources already available. Candidates must be over 17 and under 20 years of age, and the advanced course of training contemplated may be for industrial, commercial, or professional careers. The list of 145 successful candidates issued on May 20th contains the names of at least 16 young men who have chosen a medical training from those open to them at approved universities or institutions of university rank. We say at least, for it is possible that some of those who are proceeding to Oxford, Cambridge, or other universities may intend to study medicine there.

In addition to the 145 Kitchener Memorial Scholarships which carry no pledge of adherence to any particular branch of a profession, are the newly established Kitchener Medical Services Scholarships. Five of these have been awarded this year, two for the medical branch of the Royal Navy, two for the Royal Army Medical Corps, and one for the medical branch of the Royal Air Force. These scholarships are granted on condition that the scholar, on becoming qualified to practise medicine and surgery, will apply *forthwith* (our italics) for a regular commission in one of the Services and will render not less than five years' actual service on full pay. The Services reserve the right to deduct at their discretion the value of his scholarship from[1] any gratuity payable to a medical officer who fails to complete 15 years' service. Those who doubt whether it is justifiable to exact a pledge from a boy before he starts his medical studies to adopt a particular branch of medicine as a career will be relieved to learn that a refund of the scholarship money will release him from all obligations. The only criticism which we would offer concerns the word "forthwith" italicised above. We understand, however, that the interpretation of this word is in practice broad enough to allow a scholar the benefit of a resident hospital appointment.

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[1] Canad. Med. Assoc. Jour., March, 1935, p. 298.

[1] See THE LANCET, April 13th, 1935, p. 912.

VICTOR MORAX

Dr. Victor Morax, whose death occurred on May 14th in Paris, was an ophthalmologist, well known far away from Paris. He was born on the banks of the Lake of Geneva, but his medical education was carried out entirely in Paris and his first studies in bacteriology were carried out in that city. In 1900 he made an official visit to Egypt, and in the following year appeared his first significant contribution to the study of trachoma, the disease on which he was later to become the prime authority. Here he showed that many of the prominent symptoms were due to superimposed infections like the gonococcus and the pneumococcus, observations which led to the clinical division of trachoma into the chronic and the acute forms. For the next quarter of a century Morax held an important official post as clinical director at the Hôpital Lariboisière and he continued there his bacteriological studies, out of which sprang the French association entitled "The League against Trachoma." This society organised the publication of a journal dealing with trachoma, summarising all important contributions on the subject made in other languages. For the last ten years this journal has appeared quarterly under the title of "La Revue Internationale du Trachome," while Morax became a member of the executive committee of an international organisation against the spread of trachoma and was an important participant in all its activities. Latterly Morax had worked at the Pasteur Institute, with which he had always been in close touch, while 30 years ago he contributed to the Annales de l'Institut the discovery of the organism known as the Morax Axenfeld diplo-bacillus. As a member of the Ophthalmological Society of the United Kingdom, he delivered the Bowman lecture in 1919 at the annual congress of the Society held in London, his subject being plastic operations in the orbital region with special reference to war wounds, when he described in detail the methods chiefly directed to such repairs of the injured tissues as could be made for cosmetic purposes. He also wrote an admirable text-book on ophthalmology, and a treatise on the bacteriology of conjunctivitis, and was a regular contributor to the *Bulletins de la Société Française d'Ophtalmologie*. To the International Congress of Ophthalmology, held in Madrid in 1933, he submitted an important report on the ætiology of trachoma, and in the month of his death the *Annales de l'Institut Pasteur* contained an exhaustive review from him upon intraocular inoculation by tuberculosis bacilli. He was both a great worker and a great man of science.

A MEDICAL VICE-CHANCELLOR

THE appointment as vice-chancellor to a university of a graduate who has been associated with its activities almost continuously for nearly 30 years is a tribute to proved merit. On the scientific side Prof. J. S. B. Stopford, F.R.S., has served the University of Manchester as professor of anatomy since 1919, having previously been lecturer and before that demonstrator; his contributions to the anatomy of the living, dealing chiefly with sensation, the sensory pathway and the blood-supply of the brain, have brought fame to his alma mater as well as to himself. The development of his department at Manchester has made the subject of anatomy a vital part of the students' medical studies. On the academic side he has shown judgment and tact as dean of the medical school and pro-vice-chancellor of the university. His promotion at the early age o 46 to a position of high dignity will be regrette only by those who deplore the loss to neurolog which even a partial withdrawal of his energies fron active research must imply. Prof. Stopford has bee a prominent member of the General Medical Counc for many years and has shown keen interest in th knotty problems of the medical curriculum.

VIENNA GENERAL SPITAL

THIS week with the help of many foreign guest every medical faculty and every medical society i Vienna is celebrating the 150th anniversary of th foundation of the Allgemeines Krankenhaus whic has been identified as no other hospital in Europ with the teaching of clinical medicine. The foundatio of the General Spital, as it was then known, was th act of that enlightened Hapsburg monarch, Joseph II. and in its earliest days the hospital was directe by Johann Peter Frank, who, realising that clinica teaching must be controlled by the study of pathological anatomy, appointed the first prosector to a teaching school. In a festival number of the *Wiene klinische Wochenschrift*, Prof. Wagner-Jauregg eulogises this medical statesman and Prof. Max Neuburge tells the story of the school up to its culminatio at the beginning of the present century. Despit the levelling out of medical knowledge and practic the Vienna school is still making its contribution t medical thought and Neuburger finds a Vienn "nuance" in the theory and practice of all branche of medical science. The week ends with an addres by Prof. Paul Clairmont of Zurich, one of the surgica technicians of our time, on the way Vienna surgery has permeated the surgical schools of the world The festival number is evidence of the continuing liveliness of a school for which medicine everywher has respect.

THE Lister medal for 1936 has been awarded to Sir Robert Muir, F.R.S., professor of pathology in the University of Glasgow, and he will deliver the Lister memorial lecture at the Royal College of Surgeons of England next year. This is the fifth occasion of the award, which is made by a committee representative of the Royal Society, the Royal College of Surgeons of England, the Royal College of Surgeons in Ireland, the University of Edinburgh, and the University of Glasgow in recognition of distinguished contributions to surgical science. It may be noted that it is now exactly 75 years since Lister was appointed to the chair of surgery at Glasgow.

THE People's League of Health is appointing a committee to study the influence of diet on the health of pregnant women and the relation of nutrition to maternal mortality and morbidity. It is hoped to make a thorough and wide investigation and to publish a report in due course. The office of the League is at 12, Stratford-place, London, W.1.

THE trustees of the Rockefeller Foundation have promised to give £60,000 towards the building and equipment of the proposed institute for the teaching and study of neurology at the National Hospital, Queen-square, and a further £60,000 towards the endowment of the teaching and research that will be carried on there.

COUNTY HOSPITAL, EDMONTON.—The Middlesex county council has approved in principle proposals which, it is estimated, will cost about £500,000, for modernising this hospital and for adapting Edmonton House for hospital purposes.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LIII.—PROGNOSIS IN OCULAR PALSY

THE term "ocular palsy" is used to express a condition of paralysis or paresis of one or more of the muscles which govern the movements of one eye; with these muscles may be associated the levator palpebræ superior, and the intra-ocular muscles of pupillary constriction and of accommodation.

Ocular palsy is due without exception to an organic lesion of nerve or muscle and its prognosis depends primarily upon the nature of that lesion and secondarily upon the age and recuperative power of the individual concerned; the length of time since the symptoms first appeared is also a factor.

SYMPTOMS

It is impossible to discuss this subject without some reference to its associated symptoms and also to the commoner of the causes which give rise to the condition. The chief symptom complained of by sufferers from pronounced ocular palsy is diplopia when an attempt is made to move the eye in the direction of the paralysed muscle, but in cases of mere muscular weakness patients may be unconscious of actual diplopia and may complain merely of confused vision and perhaps only of occasional giddiness. Indeed, patients complaining of giddiness should be tested for a possible ocular paresis; this especially applies to those giving a history of a head injury, and to all middle-aged and elderly people. If the internal ocular muscles are involved the pupil will be dilated and accommodative power weakened—the latter of course only in patients young enough to possess such power. A weakness of a depressor muscle is always more trying than that of lateral or elevator muscles owing to the confusion caused by looking down when walking. All varieties of muscular weakness are apt to be more pronounced when the patient's vitality is lowered, either by fatigue or illness.

CAUSATION AS IT AFFECTS PROGNOSIS

Traumatism.—In most cases the lesion is primarily a nervous one, although limitation of movement of an eye may be due to direct injury to the muscle itself, for example, by forceps bruising the external rectus in cases of difficult labour and by injuries to ocular muscles owing to perforation of the orbit by a sharp object. The prognosis in this type of direct traumatism is, as a rule, bad; the muscle does not usually recover from the injury and the development of scar tissue in cases of perforation may further impede movement.

A different type of traumatic paralysis is that which arises from head injuries, a variety only too common in these days of motor accidents. In cases of fracture of the base of the skull, one or more nerves supplying the ocular muscles may be torn across, in which circumstance complete paralysis occurs and no recovery is possible. But more frequently the muscle or muscles are not completely paralysed and gradual improvement takes place, the lesion being most probably a hæmorrhage into a nerve sheath; as the blood absorbs muscular power increases. So long as any improvement is taking place further amelioration may be hoped for, but when the condition has remained stationary for a time, say, two or three months, a return to normal is improbable.

Syphilis.—Ocular paralysis is frequently syphilitic in origin; here the prognosis depends partly upon whether the lesion is meningeal or intraneural. Meningeal gummata, which exercise pressure upon the nerves and are often multiple, react readily to antisyphilitic treatment and the diplopia is rapidly cured. Paralysis of the ocular muscles in tabetic cases may assume one of two forms: (1) a transient muscular weakness lasting a few days or weeks and gradually passing away; (2) permanent paralysis, complete or incomplete, of a single nerve or part of a nerve. Either form may occur at any stage, but the first is more common in the early and the second in the later stages of the disease. In my experience, however, permanent paralysis is the more common. From a prognostic point of view in syphilitic cases the presence of an Argyll Robertson pupil, in addition to the muscular weakness, is unfavourable, while a normal pupillary reaction augurs successful results from treatment.

The ocular paralysis of *disseminated sclerosis* is usually a transient one. In this disease the myelin sheaths of the nerve-fibres are the main object of attack, the axis-cylinders often escaping permanent damage. The prognosis of this type of ocular palsy is therefore good as a rule, complete recovery often resulting.

Ocular palsy may occur as a complication of *arterio-sclerosis and high blood pressure*, the slighter degrees of paresis giving rise to symptoms of giddiness and confusion, the greater to actual diplopia. Some improvement nearly always takes place; indeed, in my experience, most of these palsies are quite transient, disappearing gradually in the course of a few weeks. In few cases, however, a certain degree of permanent weakness is left. The actual nature of the lesion in these cases is somewhat obscure; most probably a small hæmorrhage has taken place in the neighbourhood of one of the motor nuclei. Although the prognosis as regards immediate improvement and ultimate recovery of movement is good, the outlook as regards life is bad, for a cerebral hæmorrhage may follow fairly closely on the heels of the ocular palsy.

The first symptom complained of by a patient with a *cerebral tumour* may be double vision, usually due, I think, to external rectus weakness owing to downward pressure of the brain on the sixth nerve; this is, of course, relieved by a decompression operation.

In cases of ocular palsies due to *toxic causes,* such as those complicating diphtheria and diabetes, the prognosis is good. A similar type of palsy is that following febrile diseases such as influenza and pneumonia; in these the prognosis is uniformly good. Mineral poisons, such as lead, may also affect the ocular muscles, these paralyses usually disappearing with the removal of the cause.

A somewhat disconcerting variety of ocular palsy is the *sixth nerve paralysis* occasionally met with as a sequel to a mastoid operation: in my experience the muscular weakness eventually disappears completely.

Encephalitis lethargica and *polio-encephalitis* are often complicated by ophthalmoplegia in the acute stages; in both of these conditions it is rare for the ocular muscles to remain permanently paralysed.

A certain number of cases of ocular palsy occur in which no general disease can be found and the lesion is extremely difficult to account for. These cases, which bear a resemblance to Bell's palsy, are usually ascribed to rheumatic neuritis of a motor nerve, but whatever the cause may be the prognosis of these *idiopathic* cases is uniformly good, the muscular

VICTOR MORAX

Dr. Victor Morax, whose death occurred on May 14th in Paris, was an ophthalmologist, well known far away from Paris. He was born on the banks of the Lake of Geneva, but his medical education was carried out entirely in Paris and his first studies in bacteriology were carried out in that city. In 1900 he made an official visit to Egypt, and in the following year appeared his first significant contribution to the study of trachoma, the disease on which he was later to become the prime authority. Here he showed that many of the prominent symptoms were due to superimposed infections like the gonococcus and the pneumococcus, observations which led to the clinical division of trachoma into the chronic and the acute forms. For the next quarter of a century Morax held an important official post as clinical director at the Hôpital Lariboisière and he continued there his bacteriological studies, out of which sprang the French association entitled "The League against Trachoma." This society organised the publication of a journal dealing with trachoma, summarising all important contributions on the subject made in other languages. For the last ten years this journal has appeared quarterly under the title of "La Revue Internationale du Trachome," while Morax became a member of the executive committee of an international organisation against the spread of trachoma and was an important participant in all its activities. Latterly Morax had worked at the Pasteur Institute, with which he had always been in close touch, while 30 years ago he contributed to the Annales de l'Institut the discovery of the organism known as the Morax Axenfeld diplo-bacillus. As a member of the Ophthalmological Society of the United Kingdom, he delivered the Bowman lecture in 1919 at the annual congress of the Society held in London, his subject being plastic operations in the orbital region with special reference to war wounds, when he described in detail the methods chiefly directed to such repairs of the injured tissues as could be made for cosmetic purposes. He also wrote an admirable text-book on ophthalmology, and a treatise on the bacteriology of conjunctivitis, and was a regular contributor to the *Bulletins de la Société Française d'Ophtalmologie.* To the International Congress of Ophthalmology, held in Madrid in 1933, he submitted an important report on the ætiology of trachoma, and in the month of his death the *Annales de l'Institut Pasteur* contained an exhaustive review from him upon intraocular inoculation by tuberculosis bacilli. He was both a great worker and a great man of science.

A MEDICAL VICE-CHANCELLOR

THE appointment as vice-chancellor to a university of a graduate who has been associated with its activities almost continuously for nearly 30 years is a tribute to proved merit. On the scientific side Prof. J. S. B. Stopford, F.R.S., has served the University of Manchester as professor of anatomy since 1919, having previously been lecturer and before that demonstrator; his contributions to the anatomy of the living, dealing chiefly with sensation, the sensory pathway and the blood-supply of the brain, have brought fame to his alma mater as well as to himself. The development of his department at Manchester has made the subject of anatomy a vital part of the students' medical studies. On the academic side he has shown judgment and tact as dean of the medical school and pro-vice-chancellor of the university. His promotion at the early age of 46 to a position of high dignity will be regretted only by those who deplore the loss to neurology which even a partial withdrawal of his energies from active research must imply. Prof. Stopford has been a prominent member of the General Medical Council for many years and has shown keen interest in the knotty problems of the medical curriculum.

VIENNA GENERAL SPITAL

THIS week with the help of many foreign guests every medical faculty and every medical society in Vienna is celebrating the 150th anniversary of the foundation of the Allgemeines Krankenhaus which has been identified as no other hospital in Europe with the teaching of clinical medicine. The foundation of the General Spital, as it was then known, was the act of that enlightened Hapsburg monarch, Joseph II., and in its earliest days the hospital was directed by Johann Peter Frank, who, realising that clinical teaching must be controlled by the study of pathological anatomy, appointed the first prosector to a teaching school. In a festival number of the *Wiener klinische Wochenschrift,* Prof. Wagner-Jauregg eulogises this medical statesman and Prof. Max Neuburger tells the story of the school up to its culmination at the beginning of the present century. Despite the levelling out of medical knowledge and practice the Vienna school is still making its contribution to medical thought and Neuburger finds a Vienna "nuance" in the theory and practice of all branches of medical science. The week ends with an address by Prof. Paul Clairmont of Zurich, one of the surgical technicians of our time, on the way Vienna surgery has permeated the surgical schools of the world. The festival number is evidence of the continuing liveliness of a school for which medicine everywhere has respect.

THE Lister medal for 1936 has been awarded to Sir Robert Muir, F.R.S., professor of pathology in the University of Glasgow, and he will deliver the Lister memorial lecture at the Royal College of Surgeons of England next year. This is the fifth occasion of the award, which is made by a committee representative of the Royal Society, the Royal College of Surgeons of England, the Royal College of Surgeons in Ireland, the University of Edinburgh, and the University of Glasgow in recognition of distinguished contributions to surgical science. It may be noted that it is now exactly 75 years since Lister was appointed to the chair of surgery at Glasgow.

THE People's League of Health is appointing a committee to study the influence of diet on the health of pregnant women and the relation of nutrition to maternal mortality and morbidity. It is hoped to make a thorough and wide investigation and to publish a report in due course. The office of the League is at 12, Stratford-place, London, W.1.

THE trustees of the Rockefeller Foundation have promised to give £60,000 towards the building and equipment of the proposed institute for the teaching and study of neurology at the National Hospital, Queen-square, and a further £60,000 towards the endowment of the teaching and research that will be carried on there.

COUNTY HOSPITAL, EDMONTON.—The Middlesex county council has approved in principle proposals which, it is estimated, will cost about £500,000, for modernising this hospital and for adapting Edmonton House for hospital purposes.

SPECIAL ARTICLES

THE MURUTS OF NORTH BORNEO

MALARIA AND RACIAL EXTINCTION

BY A. J. COPELAND, M.D. Camb., B.Sc. Glasg., D.P.H.

LATE GOVERNMENT DISTRICT SURGEON, BEAUFORT AND INTERIOR,
BRITISH NORTH BORNEO; FORMERLY ASSISTANT TO
THE DOWNING PROFESSOR OF MEDICINE,
UNIVERSITY OF CAMBRIDGE

THE Muruts of Borneo were formerly called "head-hunters" because they raided each other's villages to secure their enemies' heads, which were brought back, smoked, and hung up amongst the rafters of their large communal houses. This is an affair of the past, and under wise guidance by European district officers they have become a docile friendly people, intelligent and active, and well under the control of their headmen. But whereas their neighbours, the Dusuns, most of whom live at higher altitudes and in a more open environment, are largely on the increase, the Murut population *has been steadily falling during the past* eight years.[1] Dirt-borne diseases such as hookworm and amœbic dysentery, and infectious diseases such as influenza and measles, are equally common among the two races, but for the Muruts these are only last straws to break the camel's back. Their debilitated physique is everywhere associated with highly endemic latent malaria, and there is reason to think that, unless action is taken soon, this disease will soon make them as scarce as the wild Sakais of the remoter jungle districts of Malaya.

In North Borneo the Dusuns and Muruts represent the two ancient types of peoples, that is, the husbandmen and the hunters (Keith). The Dusuns live in upland plains and jungle country in the north as farmers, growing *padi* and breeding oxen and native buffaloes; they discontinued head hunting about fifty years ago. The Muruts, on the other hand, are hunters, living in the unhealthier dense jungle country in the south. They live by spearing and trapping deer, pig, and other jungle animals, by fishing in the rivers, and by raising small root and rice crops. The former number (1931 Census) 28,303 persons, the latter 21,903. There are also 3735 natives of mixed Dusun and Murut descent (the Kwijaus, around Keningau), and 2147 Chinese.

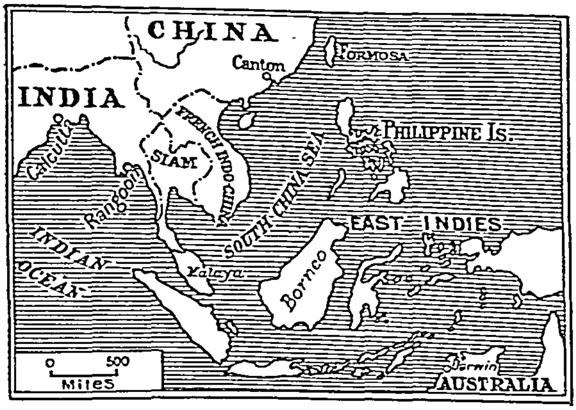

FIG. 1.—The geographical relations of Borneo.

These peoples live in primitive bamboo houses roofed with native thatch or *attap*. The Dusun house is much to be preferred to the Murut type; the former is just sufficiently large for one family, and each Dusun village has many small houses. The Murut house, on the other hand, is an enormous rambling bamboo structure in which dwells, not merely a family, but the entire village (Fig. 3). This dark and gloomy dwelling is supported on posts which are resting places for anopheles mosquitoes.

[Photograph by Gaya, Jesselton

FIG. 2.—Muruts smoking tobacco.

Medical Work in the Interior

In January, 1933, when I took charge as district surgeon, stationed at Tenom, the medical staff consisted of six dressers. These were responsible for the medical treatment of a population of some 56,000 persons. The skeleton medical service is based on six dispensaries, three for Dusuns and three for the Muruts. Of these, Tenom is now by far the best equipped (Fig. 4).

One of the pioneers of medicine in the interior was a young dresser named Mohammed Yusoph bin Samsudin, and an idea of the difficulties encountered may be gained from the following description of his experiences:

> "When I was first transferred from the Coast Hospital and take charge over Tambunan Dispensary in 1921, on my first visit to a village I found mostly of the natives both sexes adults and children were in a frightful condition and dirty, their villages and dwellings were awfully bad, dirty, dampy, and very bad smell, their health and physique were very poor. . . .
>
> "On one occasion I was ordered by the District Officer to attend to a patient a Government Native Chief in Kampong Kituntul of Tambunan District. On my arrival to that Kampong I found the patient was seriously ill passing blood and mucous stools about 15 to 20 times in 24 hours, than I told him I am going to give you an 'Obat chuchuk' otherwise you will not be cured and you may die. That is Emetine Injection, which I thought of giving it to him, he means and says 'tabak' is a word to spear, so he refuse and says to me I will 'tabak' you first and then you can 'tabak' me, so I have to return back to the Dispensary, I only send him a bottle of mixture to stop his diarrhœa, I attend to him the next day at the same time I brought my Hypodermic Syringe and needle, on arrival to his house after a while I take out and show him the needle, then he said to me he thinks it was a big needle like one of his small spear and that is the reason why he refuse to accept the injection, after he have seen the needle than he allow me to give him the injection, but still he is doubtful, he calls his people to watch and see me while giving the injection to him and he says to his people

weakness disappearing after a variable interval of time.

Ocular palsy is associated with other *rarer nervous diseases*; in most of them the prognosis of the ocular lesion is bad; also the palsies associated with myasthenia gravis have a thoroughly bad prognosis. Quite recently it has been shown that the administration of Prostigmin causes temporary relief in myasthenic cases, but it is still too early to say whether more lasting results can be obtained.

DEGREE OF RELIEF BY LOCAL MEASURES

With regard to the question whether ocular paralysis can be alleviated by local measures, apart from the treatment of any general disease which may be their cause, the two conditions which call for treatment are (1) the diplopia, and (2) the unsightly appearance of squint caused by paralysis of a muscle.

(1) *Diplopia.*—The diplopia interfering with distant vision cannot be helped by means of prisms, as it is variable in amount, changing with every movement of the eyes. But on the contrary the distressing diplopia on reading, caused by the paralysis or weakness of a depressor muscle, can often be entirely relieved by the incorporation of a suitable prismatic correction in reading-glasses. The reason for this difference is that the vertical movement of the eyes when reading is a limited one, mainly lateral ocular movements taking place as the eyes move along the page.

(2) *Appearance.*—Operations undertaken to lessen the squint caused by a completely paralysed muscle are undoubtedly of value, especially in cases where a lateral muscle is affected. Careful tenotomy of the opposing muscle, with or without shortening of the paralysed one, will usually bring the eyes into line when they are looking straight forward.

When a diplopia remains persistent, patients often become less conscious of its presence, their discomfort or confusion becoming gradually less distressing. This is probably due to their learning to suppress the image seen by the paralysed eye; there is no doubt that young patients acquire the power of ignoring the second image more readily than older ones.

Complete paralysis of the third nerve, involving as it does ptosis and consequent covering of the eye by the paralysed lid, is the least worrying form of ocular palsy as far as the diplopia is concerned because the latter symptom is abolished by the closure of the lid.

R. AFFLECK GREEVES, F.R.C.S.,
Surgeon, Royal London Ophthalmic Hospital; Senior Ophthalmic Surgeon, Middlesex Hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. J. E. Clarke to *Drake* for R.N.B.

Surg. Lt.-Comdrs. H. G. Wells and E. H. Rampling, and Surg. Lt. F. W. Chippindale to *Pembroke* for R.N.B.

Surg. Lt.-Comdr. R. W. Higgins to rank of Surg. Comdr.

Surg. Lt.-Comdr. (D.) W. E. A. Sampson, placed on the Retd. List, at own request, with rank of Surg. Comdr. (D.)

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. A. R. Thomas to *Tiverton*.

Surg. Lt. J. N. Matthews to *Pembroke* for R.N. Hospital, Chatham.

Proby. Surg. Lt. G. E. M. Benson to *Renown*.

Proby. Surg. Lt. C. J. T. Watson to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Short Serv. Commissions.—Lt. (on prob.) P. L. E. Wood is restd. to the estabt. N. I. McLeod to be Lt. (on prob.).

SUPPLEMENTARY RESERVE OF OFFICERS

G. F. E. Ramsden to be Lt.

TERRITORIAL ARMY

Lt.-Col. E. W. Matthews, T.D., having attained t age-limit, retires and retains his rank, with permission wear the prescribed uniform.

R. H. Baker McCrae to be Lt.

A. Cowie (late Offr. Cadet, Aberdeen Univ. C (Med. Unit), Sen. Div., O.T.C.) to be Lt.

SHORT SERVICE COMMISSIONS IN THE R.A.M.

The following candidates have been granted sh service commissions as lieutenants on probation in t Royal Army Medical Corps:—B. d'E. Barclay, M Otago; N. I. McLeod, L.M.S. Queen's Univ., Ontar G. S. Musgrove, M.D. Manitoba; D. S. Cochran, M.B. Aberd.; P. R. Wheatley, M.B. Lond. (Guy's); N. Flaherty, M.B. N.U.I. (Cork); T. P. O'Brien, M.B. N.U.I. (Cork); M. Kosloff, M.R.C.S. (Guy's); J. M. Lockie, M.B. Edin.; J. J. Groome, M.B. N.U.I. (Dubl C. Ryan, M.B. Dub.; A. Gleave, M.B. Liverp.; J. L Gordon, M.R.C.S. (Middlesex); J. S. Kelleher, M.B. N.U.I. (Cork); W. B. Hamilton, M.B. Dub.; G. G Robertson, M.B. Edin.; A. M. Pugh, M.B. Glasg. J. H. Taylor, M.B. Glasg.; D. Wright, M.B. Glasg. A. C. Cox, M.R.C.S. (Guy's); D. N. Keys, M.B. Dur. G. C. Dansey-Browning, M.R.C.S. (St. Thomas's A. H. T. F. Fullerton, M.R.C.S. (Birmingham); and J. F Weir, M.B. Aberd.

ROYAL AIR FORCE

Group Capts. W. Tyrrell to Headquarters, R.A.F. Inland Area, for duty as Principal Medical Officer; F. C. Cowtan to Headquarters, R.A.F. Middle E Cairo, for duty as Principal Medical Officer, vice Gr Capt. W. Tyrrell.

Wing Comdrs. R. S. Overton to Headquarters, R.A.F. Iraq, for duty as Deputy Principal Medical Officer, v Wing Comdr. P. T. Rutherford; and E. A. Lumley Headquarters, A.D.G.B., Uxbridge, for duty as Princ Medical Officer (Hygiene), vice Wing Comdr. Montgomery.

Squadron Leaders E. C. K. H. Foreman to R.A.F. Hospital, Cranwell, for duty as Medical Officer; C. F. O'Neill, O.B.E., to No. 3 Flying Training School, Granth for duty as Medical Officer.

Flight Lts. P. D. Barling to R.A.F. General Hosp Hinaidi, Iraq; G. A. M. Knight to R.A.F. Hos Aden; G. M. Anderson to No. 1 Armament Tra Camp, Catfoss; and C. H. Smith to R.A.F. Ge Hospital, Palestine and Transjordan.

Flying Offrs. R. G. James to No. 3 Flying Tr School, Grantham, and G. H. Morley to Princess R.A.F. Hospital, Halton.

Flight Lt. J. D'Isney Rear is promoted to the r Squadron Leader.

INDIAN MEDICAL SERVICE

The provisional promotion of Maj. J. McM. is confirmed and antedated to March 28th, 1933.

PERMANENT COMMISSIONS IN THE I.M.S

The selection committee is meeting at the India in June to consider applications for permanent c sions in the Indian Medical Service from well-qual men of pure European descent (British subjects) un 32 years of age. The selected candidates will course of instruction in this country before sailing India in the autumn. Further particulars will be i in our advertisement columns.

ST. BARTHOLOMEW'S HOSPITAL, ROCHESTER.—Th income of this hospital has increased, but som £30,000 is still needed to complete the proposed exte sions, which include X ray therapy equipment. Th average cost per week for each in-patient was £2 17s. as against £2 19s. 6*d*. in the previous year. The numb of in-patients showed a slight increase and the number new out-patients a slight decrease.

dently, and with greater economy. The expeditions must be made at the time of year convenient to the natives—i.e., when they have least agricultural work. In the interior, June and November are the best months. I found it was not uncommon for a dresser to be unable to collect patients because the villagers were either engaged in husbandry or in communal drinking parties. For these occasions many jars of rice spirit or *tapei* are prepared, to be sucked up through hollow canes, the end-point for each pair of drinkers being the disappearance of a generous measure of water through holes in a large leaf. Muruts and Dusuns are so partial to this indulgence that all persons (excepting small children) partake in pairs in turn, day and night, until the supply is exhausted. Let the visitor, when he opens the party (as *adat* or native custom ordains), disregard the occasional passage of a bulky insect up through the tube; the polite words of thanks are, in Murut, *amis kepioh*—how deliciously sweet!

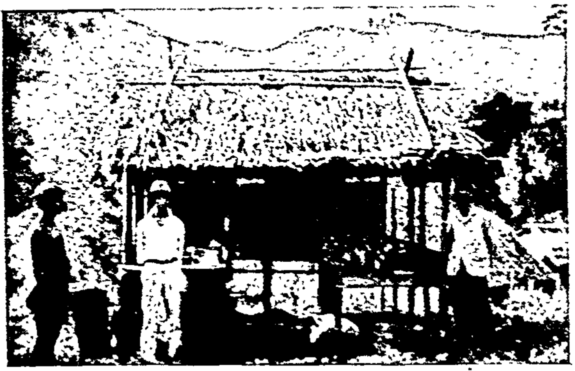

FIG. 5.—A small dispensary, with dressers and carrier.

The calendar in North Borneo is the knotted rattan fibre, one knot for each day. The headmen, on their return from the Government station, distribute these *timbuku* to their villagers, who cut off one knot a day. When only four or five knots are left, they come in to the treatment centre.

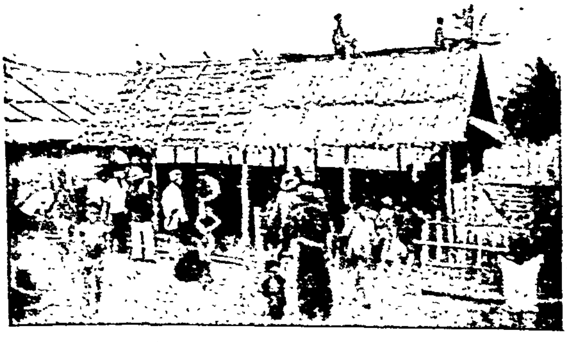

FIG. 6.—A large temporary dispensary in process of erection by Dusuns.

A medical examination, to the native, is only a tiresome and rather unnecessary preliminary to the giving of *obat*, *kapas*, and *ikat* (medicine, dressing, and bandage), but this depressing attitude is not confined to jungle folk. The necessary treatment must not, however, be delayed, lest the patient should exhaust his food supply—always carried on the person—before the trip is completed. Any examination (e.g., scientific tests such as blood groupings) which is not followed by treatment causes cruel disappointment to those who have travelled long journeys of many days, expecting medicines and dressings, and the matter is neither forgotten nor forgiven. For this reason, *any* purely scientific expedition amongst natives should always be accompanied by a dresser having local knowledge and equipped with sufficient medical supplies.

THE MEDICINE MARKET

Jungle dispensaries.—The natives are very skilful in the making of small houses of bamboo, roofed with leaves. Such a temporary *sulap* can be erected in half an hour (Fig. 5). The people willingly put up larger and more permanent places without cost, so anxious are they for treatment, and especially for quinine. The type of structure that was found to be most useful was as follows (Fig. 6):—

Length 36 ft., width 18 ft., open on one side; the whole surrounded by a fence to keep out crowds. No floor, and attap roof. Three sides carry a wide side platform, 4 ft. wide, at a convenient height. In the centre is a wide bamboo table 18 ft. by 9 ft. This forms a strongly built structure, useful for medical work, including the giving of large numbers of intravenous injections for yaws, and as a temporary rest-house for patients at night.

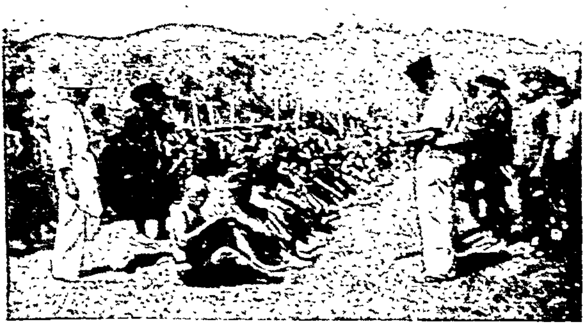

FIG. 7.—Waiting for the medical officer (Dusuns).

Examination of patients.—Men, women, and children were examined separately, grouped according to their villages. The method was for the natives to sit in a long line on the grass (Figs. 7 and 8). As the medical examiner approached they lay back, with the arms by the sides, and the knees drawn up. Spleen measurements were made by taking the distance in centimetres between the apex of the spleen and the costal margin. Patients whose symptoms or physical signs pointed to some complaint necessitating a further examination were noted down and seen later.

Records.—I devised a simple system which any dresser could make use of, working single-handed, and from which the spleen indices and other statistics could readily be calculated.

Temporary native treatment centre at ....
Date..............
Villages:
1. .... Headman ....
2. .... Headman ....
&c.

Adult males. Adult females.	Children, 2–10 years. Infants.
Spleen not enlarged.	*Spleen enlarged.*
Healthy. Yaws. Other diseases.	Malaria only. Yaws. Other diseases.
Names, &c.	Names, &c. ....

Dispensing.—Bottles (always scarce) were collected at the time of examination, and a coloured voucher if I die through the 'tabak' by the 'kerani' (dresser) that is the injection, all of you kill the 'kerani' too for me. . . .

"I came across to a wound case, I wanted to apply a few stitches, the patient refuse and said to me my skin is not a cloth, and how could you stitch it, I explained to him as regards to this matter, but still he refuse, and said I want 'Obat' medicine only, I can do it myself in the Kampong, so I gave him some dressing and off he went with the bleeding wound."

This intelligent dresser soon gained the confidence of the natives, and during the next 13 years, in addition to other excellent work in all parts of the interior, gave many thousands of intravenous novarsenobenzol injections for yaws. His special experience is now lost, as he has been removed to the Coast.

The next advance was made by Dr. G. G. Campbell, medical officer to Sapong Estate, when he initiated the successful yaws campaign.[1] The rapid action of N.A.B. in clearing up yaws lesions has given such confidence that many natives now demand an injection or *chuchuk* for all ailments.

MEDICAL SURVEY EXPEDITIONS

During 1933 I made five tours to many parts of the interior, accompanied by one or more dressers, with full medical equipment. In 106 days more than 3000 natives (Dusuns, Muruts, and Kwijaus) were examined and treated, medically and surgically. I was able to cover about 750 miles by pony, 250 miles on foot, and about 30 miles by native canoes. The statistical results obtained were fully confirmed by a more complete survey of 5423 natives in all parts of the Interior made during the first half of 1934 by six dressers. These workers, whose names are Mohammed Yusoph bin Samsudin, Mohammed Gani, Wong Boo Choon, Chin Hin Shing, Chin Yun En, and Andau bin Tangkim, travelled 2500 miles and visited 171 villages. Their detailed reports are far in advance of any field records previously made in North Borneo, and the work they accomplished is beyond praise.

FIG. 3.—The front of a typical Murut house.

In order to make the best use of the small and scattered staff, I gradually evolved a system of temporary native treatment centres which became so popular tha they came to be known as "medicine markets"—the *Tamu berobat*. It was found that two persons working together methodically to a time schedule, when their arrival had been expected, could accomplish more than three or four working indepen-

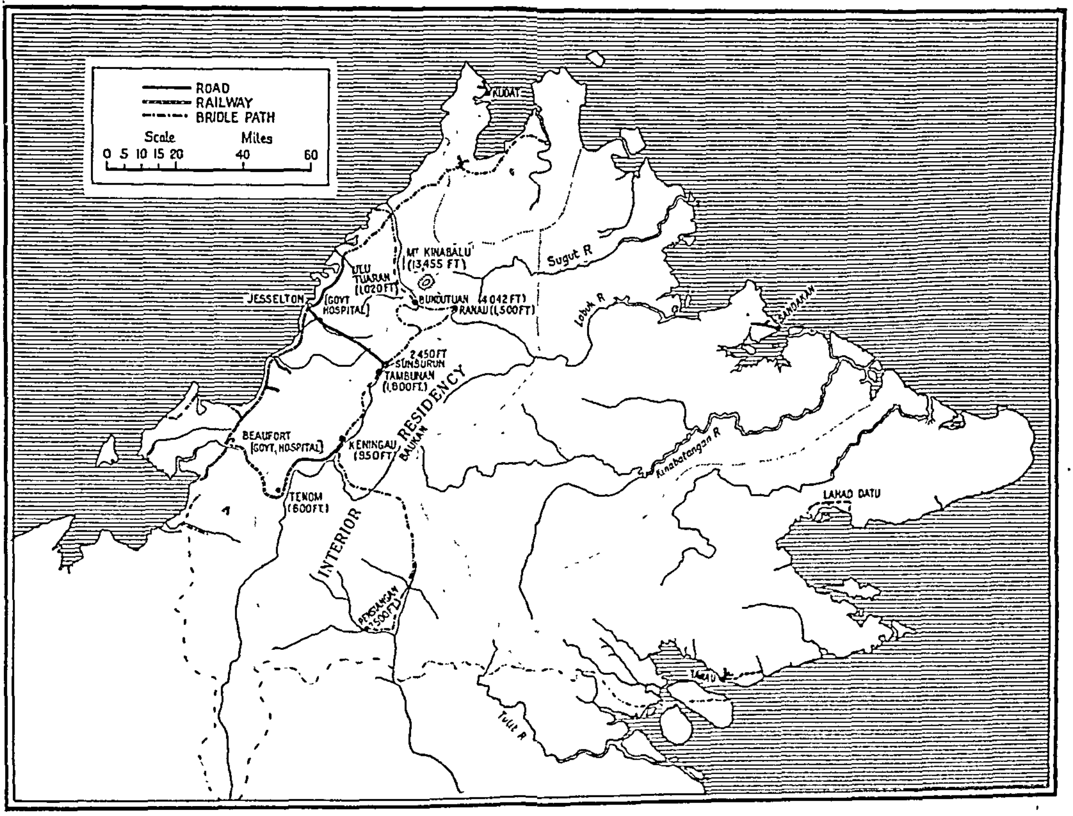

FIG. 4.—Map of British North Borneo, showing the position of the six dispensaries of the Interior Residency. Their height above sea level is indicated and their lines of communication.

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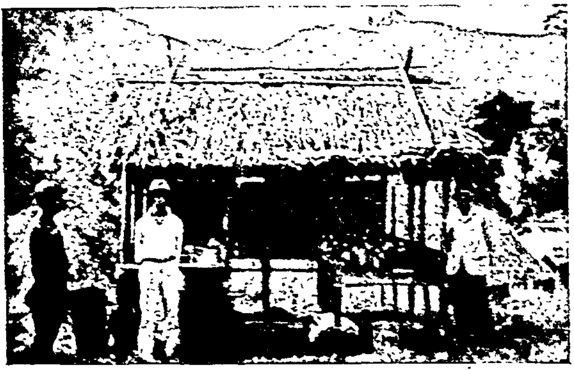

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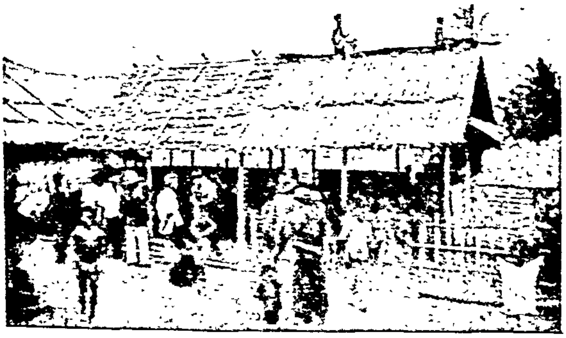

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Jungle dispensaries.—The natives are very skilful in the making of small houses of bamboo, roofed with leaves. Such a temporary *sulap* can be erected in half an hour (Fig. 5). The people willingly put up larger and more permanent places without cost, so anxious are they for treatment, and especially for quinine. The type of structure that was found to be most useful was as follows (Fig. 6):—

Length 36 ft., width 18 ft., open on one side; the whole surrounded by a fence to keep out crowds. No floor, and attap roof. Three sides carry a wide side platform, 4 ft. wide, at a convenient height. In the centre is a wide bamboo table 18 ft. by 9 ft. This forms a strongly built structure, useful for medical work, including the giving of large numbers of intravenous injections for yaws, and as a temporary rest-house for patients at night.

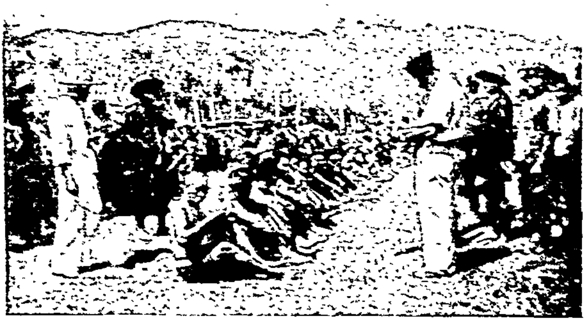


FIG. 7.—Waiting for the medical officer (Dusuns).

Examination of patients.—Men, women, and children were examined separately, grouped according to their villages. The method was for the natives to sit in a long line on the grass (Figs. 7 and 8). As the medical examiner approached they lay back, with the arms by the sides, and the knees drawn up. Spleen measurements were made by taking the distance in centimetres between the apex of the spleen and the costal margin. Patients whose symptoms or physical signs pointed to some complaint necessitating a further examination were noted down and seen later.

Records.—I devised a simple system which any dresser could make use of, working single-handed, and from which the spleen indices and other statistics could readily be calculated.

Temporary native treatment centre at ....
Date............
Villages:
1. .... Headman ....
2. .... Headman ....
&c.
Adult males. Children, 2–10 years.
Adult females. Infants.

Spleen not enlarged. *Spleen enlarged.*
Healthy. Yaws. Other diseases. Malaria only. Yaws. Other diseases.
Names, &c. .... Names, &c. ....
....

Dispensing.—Bottles (always scarce) were collected at the time of examination, and a coloured voucher was given in exchange. The bottles were grouped on the grass, and later removed to the sulap dispensary, where they were filled with the requisite mixture from concentrated stock after the first day's work. The bottles were held in position on the platform by strings of rattan, and patients were warned that persons causing these bottles to be spilt would acquire all the diseases which would otherwise have been cured! The bottles were kept back, for obvious reasons, until the completion of the hookworm treatment. The owners were then admitted a few at a time to receive medicines and dressings, and special treatments, such as the application of lint soaked in medicinal paraffin to dirty ulcers, castor oil locally for pink eye, and dental extractions. The women often file the front teeth for cosmetic effect, and the filed stumps decay and cause much trouble.

Schedule of work.—The following is typical of three days' work at a tamu berobat, or medicine market:—

First day.—12.30 P.M. to 6 P.M.: examine 80 men, 74 women, 87 children. Total, 241 persons.

Second day.—6.45 A.M. to 7.30 P.M.: examine 154 men, 132 women, 122 children (total, 408); 100 cases of yaws receive salts; 250 bottles of medicine dispensed.

Third day.—6 A.M. to 6.45 P.M.: 83 intravenous N.A.B. injections, and 7 Acetylarsan injections for yaws, after temperatures taken and urine boiled. Mass hookworm treatment for 167 men, 155 women and 120 children (total, 442). Salts at 7 A.M., oil of chenopodium at 9, 10 and 11 A.M. and salts again at 1 P.M. Gave out 250 bottles; treatments for ulcers, septic wounds, conjunctivitis, dermatitis, tinea, scabies, &c.

Fourth day.—Left Centre at 6.30 A.M.

Staff.—1 medical officer, 1 district officer, 1 dresser, 1 chief headman, 2 native policemen (total, 6).

[*Photograph by B. R. Cole Adams*

FIG. 9.—Muruts: a blow-pipe competition.

A Vanishing Race

An official report dated Feb. 18th, 1932, states that, although the figures cannot be regarded as accurate, during each of the years 1927–31 the number of deaths registered in the four Murut districts considerable exceeded the number of births. In the Dusun districts the births exceeded the deaths in 1930 and 1931, and also in 1929 at Ranau. The birth- and death-rates (per 1000 of population) are shown in Table I.

The conclusion drawn was that the Murut population was steadily decreasing, whereas the Dusun population had increased since 1930.

Mr. A. F. Richards, late governor of British North Borneo, whose encouraging interest in the work done in the interior I gratefully acknowledge, in a note dated Feb. 22nd, 1932, pointed out that "the tendency of such primitive races to decrease is a problem by no means confined to the State. The best means of combating the causes that contribute to the decline in their numbers is the provision and extension of medical facilities." What is this recent mysterious "tendency to decrease" which the equally primitive Dusuns have escaped? As possible causes of the decrease, Mr. Richards referred to bad sanitation, birth control, alcohol, and dietetic deficiencies. In July, 1933, I was able to elicit the views of the native headmen of the Baukan Murut country, when I visited their villages, and the headmen informed me that, in their opinion,

(*a*) Children are noticeably fewer than ten years ago.

(*b*) There are fewer pregnant women. The reason for this was not clear to the chief headman, but he thought it was largely due to venereal disease.

(*c*) Women do not miscarry more than ten years ago, and the number of miscarriages is not great.

(*d*) *The married women want children,* and are very disappointed when they fail to achieve pregnancy. Contraception is not practised.

(*e*) They had never heard of abortion being procured.

(*f*) There are not more deaths in childbirth than there were ten years ago.

FIG. 8.—Examination of feet for crab yaws (Dusuns). Dresser on right.

TABLE I.—*Birth-rates and Death-rates in the Interior* (*per* 1000)

—	Estimated population on Dec. 31st, 1931.	Birth-rate for 1931.	Death-rate for 1931.
MURUTS—			
Tenom	8,949	11·7	14
Pensiangan .. / Sepulut	9,105	17·5	40·4
Keningau	9,198	21·2	23·7
DUSUNS—			
Tambunan .. / Ranau	28,831	33·3	15·6

(*g*) The food supply is the same in quantity and variety *as it was ten years ago.*

(*h*) *There are more clearances of jungle than there were ten years ago.*

(*i*) *There are more cases of fever than there were ten years ago.*

I think that these last two statements contain the explanation of the "tendency to decrease."

Prevalence of Malaria

Campbell, in the report already mentioned, describes the malaria situation as follows:—

"On Estates during the years 1917 to 1925 the predominating type of Malaria was a mild Benign Tertian, with sporadic cases of Quartan and Subtertian. This was probably the type endemic to the country, and the type to which the Borneo native had developed a certain degree of immunity. With the great influx of Javanese in 1925–1927 *our type* of Malaria changed to a virulent and predominating Subtertian, disseminated by the new labourers, 65 per cent. of whom (even by the thin smear method) were found positive to Subtertian Malaria on arrival. The natives, as usual, journeyed down to the

TABLE II.—DISTRIBUTION OF MALARIAL INFECTION

Natives having enlarged spleens: 1934 survey

District.	Villages.	Children, 2–10.			Infants.			Adults.						
		Examined.	Enlarged spleens.	True spleen index.	Examined.	Enlarged spleens.	Infant spleen index.	Examined.		Enlarged spleens.		Adult spleen index.		
								M.	F.	M.	F.	M.	F.	Av.
MURUT.														
Tenom	8	19	13	68·4	2	2	—	91	6	31	2	34·0	(33·3)	30·9
Pensiangan, Group I.	34	134	93	69·4	28	9	32·1	406	299	251	161	61·8	53·8	58·4
,, ,, II.*	—	(86)	(84)		(12)	(7)		(402)		(328)				
Keningau	7	146	105	71·9	25	24	96·0	381	355	200	191	52·2	53·8	53·1
	49	299	211	70·5	55	35	63·6	878	660	482	354	54·8	53·6	54·3
DUSUN.														
Tambunan ..	8	95	14	14·7	15	0	0·0	120	47	48	12	40·0	25·5	35·9
Ranau	45	432	364	84·2	69	61	88·4	1168	637	659	449	56·4	70·4	61·3
Bundu Tuhan ..	8	245	20	8·1	0	—	—	180	151	47	27	26·1	17·8	22·3
Ulu Tuaran ..	16	114	17	14·9	6	0	0·0	132	120	55	59	41·6	49·1	45·2
	77	886	415	46·8	90	61	67·7	1600	955	809	547	50·5	57·6	53·0

* Group II. The Bigual and Rundum groups of villages.

Estates to find work, contracted this new and virulent type of Malaria to which no resistance had been developed, and when unable to work went home to spread it amongst their friends and relatives in the Kampongs (villages)."

The results of this change in infection are seen in the figures shown in Tables II. and III.

Predominant type of malarial parasite.[5]—The following are the results of 420 consecutive thick blood film examinations at Tenom in January to June, 1934—subtertian, 23·9 per cent.; benign tertian, 14·4 per cent.; quartan, 0·2 per cent.; mixed subtertian and benign tertian, 0·9 per cent.; negative, 60·6 per cent. The predominant malarial parasite amongst Muruts is *Plasmodium falciparum*.

Incidence of splenomegaly.—The findings set out in Tables II. to IV. have been submitted to the British North Borneo (Chartered) Company.[5] They refer to 5423 natives, of whom 1892 are Muruts and 3531 are Dusuns. There were also 500 Muruts in the Pensiangan Group II. area, but these are not included, since the records are no longer available. In regard to no fewer than 3877, including all the Muruts, the actual names of the natives and the names of their villages and headmen are recorded, together with further information as to spleen measurement and any other disease or diseases found.

TABLE III.—*Intensity of Malarial Infection*

Average costal projection of enlarged spleens measured.

District.	Numbers of enlarged spleens measured.				Average costal projection: centimetres.			
	Children, 2–10	Infants.	Adult (M.)	Adult (F.)	Children, 2–10	Infants.	Adult (M.)	Adult (F.)
MURUT.								
Tenom	13	(2)	31	(2)	8·7	(6·5)	10·8	(13·75)
Pensiangan Group I...	93	9	251	159	6·5	3·0	8·2	8·2
Keningau ..	47	16	99	111	6·1	3·5	6·7	6·3
DUSUN.								
Tambunan..	14	0	37	12	3·6	—	7·0	6·0
*	310	0	225	120	7·2	—	9·0	9·3
Ranau ..	166	17	206	190	6·1	5·0	7·5	7·3
Bundu Tuhan ..	17	0	47	27	4·1	—	6·1	7·7
Ulu Tuaran	17	0	55	59	5·6	—	9·2	8·7

* District Surgeon's Survey, 1933, before mass treatments for latent malaria, hookworm, &c., had been given in this group of villages (both from Sunsuron, 6 miles north of Tambunan).

Of those examined, 2914 of the natives of the interior, with Ulu Tuaran and Meridi—comprising 1082 Muruts and 1832 Dusuns—suffered from spleen enlargement, and most of them from other diseases too. I saw one Murut who had enlargement of the spleen due to latent malaria with coexistent yaws, balanitis and gonorrhœa, and helminthic disease. The association of helminthic disease with latent malaria is almost universal, and to this foundation is frequently added one or even several of the following: amœbic dysentery, hepatitis, liver abscess (sometimes enormous: from one Murut I removed 6 pints 12 ounces of "strawberry fool" pus at one evacuation, using a Potain's aspirator, and he went home on the fifth day); blindness in one or both eyes due to old gonorrhœal or tropical ophthalmia, yaws (now greatly diminished in incidence), goitre, rheumatism, bronchitis, ulcers, tinea imbricata, and, in many cases amongst the Muruts, gonorrhœa. A comfortable phrase such as "the tendency of such primitive races to decrease," written in all innocence, can sometimes cover a multitude of diseases. When I toured amongst the Muruts, I was astounded that humanity could survive such multiple infections and afflictions.

TABLE IV.—*Malarial Infection and Child Population*

Child population (including infants), spleen indices, and altitudes.

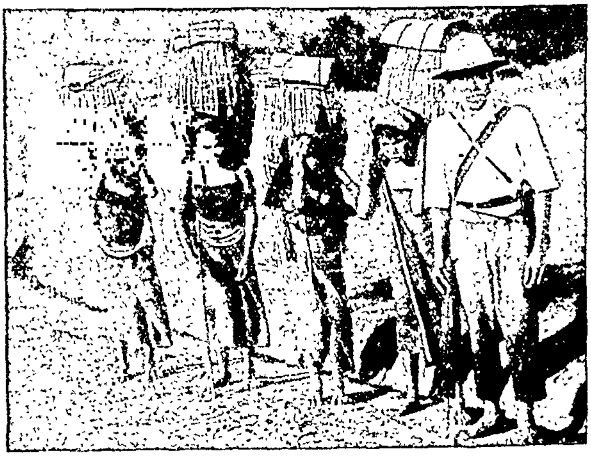
District.	Children examined.	Average number of children in each village surveyed.	Child population per 1000 total pop. examined.	Approximate altitude above sea-level: feet.	True spleen indices.
MURUT.					
Tenom ..	21	3	179	600	68·4
Pensiangan I.	162	5	187	500–1000	69·4
Keningau ..	171	24	188	950	71·9
DUSUN.					
Tambunan ..	110	14	397	1800	14·7
Ranau ..	501	11	217	1500	84·2
Bundu Tuhan	245	31	425	4042	8·1
Ulu Tuaran ..	120	7	323	1020	14·9

GENERAL CONSIDERATIONS

Quinine has been, and is doubtless still, distributed amongst the inhabitants of the interior. The amount provided, however, is such that one can only describe these people as *an untreated population.* The statistics summarised in Tables II. to IV. are of all the more interest because the 56,000 inhabitants are spread over some 6500 square miles comprising areas widely contrasted as regards country (jungle and open uplands), altitude (between 600 and 4042 ft.), native dwellings (large communal and small family), and types of native (hunters and husbandmen). Four main conclusions can be drawn :—

(*a*) Malaria is highly endemic amongst all the Muruts, but of low endemicity amongst the Dusuns, except the Ranau Dusuns, amongst whom it is hyperendemic.

(*b*) There are two types of district in the interior. In Type I. a high spleen index is associated with a high or even higher infant spleen index, and a high adult spleen index in which the adult female index is nearly equal to or sometimes higher than the adult male index. Type II., on the other hand, has a low spleen index, associated with a negative infant spleen index, but with an adult spleen index higher than the true spleen index. In this type the adult male spleen index is higher than the adult female spleen index. The exception is in the Ulu Tuaran, where the women work as tobacco carriers (Fig. 10), and travel further from home than the men. I suggest that in the first type the principal source of infection is in or close to the dwelling place, while in the second type the houses are less malarious. It is, of course, obvious that in an untreated community the distribution of malarial infection amongst groups of individuals living or working in close proximity to anopheles breeding places must bear some inverse ratio to the average number of "danger hours" passed in safe or safer zones, and the converse must also be equally true. By "danger hours" I mean the hours of feeding of the local female anopheles mosquitoes.



[*Photograph by Gaya*

FIG. 10.—Dusun women from upland districts carrying tobacco.

(*c*) The intensity of infection, estimated by the average spleen enlargement, appears to be greatest in the Tenom and Pensiangan districts—i.e., in the districts nearest to the rubber estates. This confirms Dr. Campbell's clinical findings.[1]

(*d*) The extremely low child population amongst the Muruts, and also amongst the Ranau Dusuns, is shown in Table IV. The scarcity of children was very noticeable in the Baukan country east of Keningau when I visited the villages. The Table suggests strongly that malaria is *the* vital factor in the causation of a low child population in the above areas. The figures are not exactly accurate, but give an idea of the comparatively low child populations in the worst malarious areas. They provide, in fact, ample evidence of the truth of Campbell's saying that the Muruts are "doomed to slow but inevitable extinction, unless given systematic and energetic medical aid."[1]

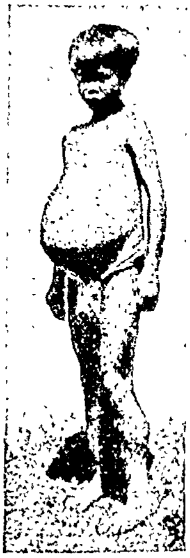


FIG. 11.—A Dusun boy with malarial splenomegaly.

In the tropics, when malarial infection becomes general in young children (Fig. 11), or when a virulent parasite is introduced, and becomes established, the situation needs at least as much attention as a dangerous epidemic receives in Europe.

WHAT IS BEING DONE

Apart from weekly antilarval oiling at Tenom and Keningau stations, the campaign against malaria is carried on entirely by the distribution of drugs from the six dispensaries. (Two of these have hospitals with 16 beds, and two others have rest-houses for patients.) Quinine sulphate is the remedy chiefly employed and gives satisfactory results administered as a powder in capsules. The quantities allotted in 1932, and during the first nine months of 1933, are shown in Table V.

In addition a small amount of quinine bihydrochloride and quinine ethylcarbonate (Euquinine) is available. The cost of quinine sulphate in North Borneo is approximately 37*s.* per pound; this is 680 ten-grain doses, and according to Bass[8] is sufficient for the disinfection of 10 adults when spread over eight weeks. On the basis of Bass's figures therefore the cost of disinfection for each adult is 3*s.* 8*d.* in North Borneo. To this must be added the cost of 15 tablets of Plasmoquine (1*s.* 2*d.*) for complete sterilisation, making a total of 4*s.* 10*d.* for the complete sterilisation of one adult. The cost of ridding 22,000 Muruts of malarial parasites would consequently be £5316; whereas the cost of the quinine actually supplied in 1932 to the three Murut districts, to a population of 27,252 (including Kwijans and 2147 Chinese), works out at £57 8s.

TABLE V.—*Quinine Sulphate (lb.) Allotted to North Borneo Natives* [3]

	1932.	1933 (9 months).
Murut districts (population 27,252) ..	31	17
Dusun districts (population 28,831) ..	36	22¼
Total (population 56,083)	67	39¼

Each adult male native pays a poll tax of 2*s.* 4*d.* per annum to the British North Borneo (Chartered) Company, in whose hands the government of the country rests. This company, the last of the chartered companies, is answerable to its shareholders in matters of finance. The poll tax is a hardship, as the Muruts have great difficulty in disposing of their jungle produce (rattan, resin, camphor, &c.) to the Chinese for cash instead of by the usual barter. The healthy looking cheerful aborigines of Australia have a monthly allowance of groceries, free blankets, and are exempt from taxation. The last privilege might be granted the

Muruts and Ranau Dusuns, in view of their extreme poverty and debilitated physical condition.

Conclusions

(1) The Murut race is steadily decreasing; it has a low birth-rate and a high death-rate. (2) Malaria is highly endemic amongst the Muruts, and hyper-endemic amongst the Ranau Dusuns, and the high true spleen-rates are associated with serious infection even among the youngest infants. (3) Insufficient quinine is allotted to these natives, numbering about 22,000 persons; the amount of quinine sulphate distributed annually is less than 50 lb. weight. (4) If this race is to be saved, the distribution of quinine must be much increased. (5) It can conveniently be distributed by the method of the "medicine market," or by individual headmen. (6) Muruts and Ranau Dusuns should now and for ever be granted exemption from poll-tax or any other form of direct taxation.

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SCOTLAND

(FROM OUR OWN CORRESPONDENT)

ANTERIOR LOBE OF THE PITUITARY

AT a recent meeting of the Edinburgh Obstetrical Society Dr. J. H. Biggart, pathologist to the Scottish Asylums Board, described investigations he has made on the basophil cells of the anterior lobe of the pituitary. After castration in the human, he said, the anterior lobe shows an increase in basophil cells, and coarse vacuoles appear in these cells. Since there are at present no histological criteria of the activity of secretion in the pituitary gland, Dr. Biggart has studied the occurrence of this vacuolisation. As many as 1000 human pituitary glands have been examined from this point of view, and he has found that there is no correlation between the occurrence of this change and the presence of toxæmias, septic processes in the gland or brain, tuberculosis, encephalitis, or vascular lesions. When the change was considered in relation to the patient's age it was found that in women the vacuolisation was constantly present after the menopause. The changes in the men, however, did not show a similar age-incidence, and Dr. Biggart suggests that there is some relationship between vacuolisation in the male pituitary gland and the activity of the seminal epithelium. On counting the basophil cells in various cases, he notes that these cells are greater in number after the menopause, but the increase is much less than that seen after castration. No correlation could be found between basophil invasion of the posterior lobe and hypertensive conditions, and Cushing's observations on the occurrence of this change in eclampsia were not confirmed.

Dr. Biggart thinks it probable that the basophil cells manufacture and store part at least of the gonadotropic hormone, but conclusions about the functions of these cells are made difficult by the fact that they react to other conditions, such as Addison's disease and nephritis. His investigations do not confirm Woollard's contention that the basophil cells merely inhibit the activity of the eosinophils.

FULL-TIME MEDICAL SERVICE FOR THE POOR

The public health and public assistance committees in Glasgow have decided to advise the corporation to organise a full-time medical service for the poor. This work is at present undertaken by doctors on a part-time basis. The local division of the British Medical Association has advocated a system similar to that of the panel under the health insurance scheme, but the majority of the counsellors, who have made a special study of the situation, have preferred to recommend that the work be undertaken by a permanent medical staff. The estimated cost of the service is £20,000 a year.

RED CROSS SOCIETY

The latest annual report of the Scottish branch of the British Red Cross Society states that there are now over 4000 members enrolled in the detachments, and of these over 1000 have undertaken to serve in any part of the world to which they may be sent on the outbreak of war. Much attention has recently been paid to the training of members for first aid in chemical warfare, and 800 members have already undergone such training.

PARIS

(FROM OUR OWN CORRESPONDENT)

PROF. JEANSELME

THE death of Jeanselme removes a man prominent in French medicine. On the subjects of dermatology, venereal disease, and leprosy he was encyclopædic, and his authority in these spheres was unchallenged. At the time of his death he was engaged on a monumental study of syphilis, four volumes of which have already appeared, while four others are either in the press or still incomplete. In the campaign against venereal disease he was an advocate of the regulation of prostitution, and over this subject he broke many a lance with the abolitionists. His attitude was, however, always judicial, and his strong historical sense gave him a perspective which saved him from many hasty conclusions. In collaboration with Burnier he did much to develop the venereal disease dispensary which he organised as an information service. Thanks to the statistics obtained from this source, he was able to show that, in the Paris area, the decline in syphilis between 1920 and 1924 was followed by a rise traceable to the too early cessation of treatment, to the development of clandestine prostitution, and to lack of sex education among women. He was, in fact, a great believer in sex education as a weapon against v nereal disease.
His interest in the history of med was not con-
fined to syphilis, and he was pr of the French
Société d'Histoire de la Médec 20 and 1921.
He was also one of the found ociété Inter-
nationale d'Histoire de la he presided
over its congress in P Among his
historical studies was of disease
on the military cam *Indeed, the*
history of medicine eanselme's greatest pre-
occupation during the latter part of his life.

of antidiphtheritic serum ; her illness was mild and uncomplicated.

I am indebted to Dr. A. E. Hodgson, medical superintendent of the hospital, for guidance in the clinical management of the incident and for permission to publish this account of the outbreak.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 11TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0 ; scarlet fever, 2052 ; diphtheria, 1015 ; enteric fever, 21 ; acute pneumonia (primary or influenzal), 944 ; puerperal fever, 43 ; puerperal pyrexia, 116 ; cerebro-spinal fever, 17 ; acute poliomyelitis, 5 ; encephalitis lethargica, 4 ; dysentery, 12 ; ophthalmia neonatorum, 72. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 17th was 3271, which included : scarlet fever, 996 ; diphtheria, 1319 ; measles, 32 ; whooping-cough, 391 ; puerperal fever, 25 mothers (plus 5 babies) ; encephalitis lethargica, 269 ; poliomyelitis, 3. At St. Margaret's Hospital there were 21 babies (plus 12 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 28 (1) from measles, 7 (0) from scarlet fever, 24 (4) from whooping-cough, 29 (8) from diphtheria, 46 (15) from diarrhœa and enteritis under two years, and 87 (7) from influenza. The figures in parentheses are *those for London itself.*

No great town reported more than 6 deaths from influenza, this was the number at Manchester ; 4 deaths were reported from Leeds, Newcastle-on-Tyne, Sheffield, and Birmingham. Eight fatal cases of measles occurred at Wigan, 4 at Sunderland. Preston and Exeter reported the two fatal cases of enteric fever.

The number of stillbirths notified during the week was 293 (corresponding to a rate of 44 per 1000 total births), including 45 in London.

MEDICINE AND THE LAW

Unsuccessful Action for Negligence against Surgeon

IN Cain *v.* Davis Mr. Justice Branson rejected a claim for damages based on allegations that a surgeon had negligently left a swab or pieces of gauze in the body of a child after an operation. Mr. K. J. Acton Davis had operated in March, 1932, on the child at the Princess Elizabeth of York Hospital for Children, where he is senior surgeon. Subsequent operations were performed by other surgeons when an abscess formed. In November 1933, pieces of gauze were expelled through the operation wound. The evidence of X ray photographs, taken in January, 1933, showed no trace of a foreign body in the operation wound. Mr. W. E. Miles, consulting surgeon to the Cancer Hospital and the Royal Hospital, Richmond, stated that the fact that the wound remained healed for six or seven months was proof positive that no foreign body was present. The defence was that swabs and not gauze were used in the course of the operation conducted by Mr. Acton Davis, and that nothing was left in the child's body. On the other hand, the child's mother and the nurse who attended the child after the subsequent operation both stated that no gauze was then used for plugging the wound. The judge found that the gauze entered the child's body at a date subsequent to the first operation. "I am satisfied," he said, "that, if the onus had been upon Mr. Acton Davis to prove that the pieces of gauze were not left behind, I should have held him to have discharged that onus by affirmative proof that they were not."

Two points about the case may be worth noting. In the first place the trial took place before a judge without a jury, so that the hearing was probably shortened and there was the less temptation to introduce considerations of sentiment such as are sometimes addressed to juries. Secondly, counsel for the plaintiff seemed anxious not to impute direct negligence to the surgeon. In his final speech he observed that Mr. Acton Davis had one advantage in the witness-box because everybody would know at once that, if he had done anything negligent, he was absolutely unconscious of it at the time ; the negligence alleged was the negligence of not observing something or of completely forgetting something he had done. "If," said counsel, "the court should find against Mr. Acton Davis, one hopes he will look upon himself as unfortunate rather than as one to whom the smallest stigma of incompetence or negligence is attached." This was a curiously apologetic way of pressing home the final stage of an assault upon a surgeon's professional conduct. Fortunately the assault was decisively repulsed.

Drug Addiction as an Occasion for Divorce

In the medico-legal section of a German medical weekly (Münch. med. Woch., May 9th, p. 771) is set out a decision of the Düsseldorf appeal court. A man who had years before been given morphine for relief of pain began to give himself injections and finally became a morphinist. He pawned his household goods, got into debt, and was in trouble for infringement of the law against traffic in dangerous drugs. When he could obtain no money for morphine he threatened his wife and caused her grievous bodily injuries. Article 1568 of the Bürgerliches Gesetzbuch gives as a sufficient reason for divorce when default of the duties implied in the marriage contract occasions so grave an interference with marital relations that prolongation of the marriage can no longer be reasonably expected. In this case the morphine habit was deemed incurable, although the man was not actually a psychopath. He had several times been in an institution but had always relapsed on coming out ; if his morphine habit was incurable he was himself to blame for it, as he left before completion of his cure. The incurable addiction of one spouse having led to complete break-up of the marriage a divorce must be granted to the other.

The German code, it will be observed, makes no specific allusion to drug addiction as a ground of divorce. The laws of other countries are similarly silent. Chronic drunkenness is a ground of divorce in many of the States of America, in Greece, and elsewhere, and, when other elements are present, in Australia and New Zealand. In England we obstinately refuse to enlarge the grounds of dissolution of marriage, in spite of the efforts of reformers like Lord Buckmaster. Even incurable insanity, recognised for this purpose in Sweden, Switzerland, Germany, and elsewhere, is not ground for divorce in England. The attitude of our Parliament, which has shown itself hitherto remarkably unwilling to weaken the marriage tie, may be contrasted with the elastic spirit of French law. One of the grounds of divorce in France is moral cruelty (*injures graves*). The standard examples in the French courts include excessive and unjustifiable jealousy on the husband's part, refusal to keep a promise to proceed to the religious ceremony after the civil marriage, publication of seriously defamatory statements about the petitioner, and insistence on the use of contraceptives.

OBITUARY

THOMAS WALTER HARROPP GARSTANG,
M.A. Oxon., M.R.C.S. Eng., D.P.H. Manch.

THE recent death of Dr. T. W. H. Garstang has removed from the profession one who played a prominent part in much medico-political work. After graduating in arts at Oxford he entered St. Bartholomew's Hospital as Jeaffreson exhibitioner, qualified as M.R.C.S. Eng., L.S.A. Lond. in 1878, was a prizeman, and for a time resident obstetric assistant at the hospital. His early work showed practical interest in obstetrics, but later he turned towards public health, took the diploma of D.P.H Vict., and held appointments as medical officer of health under a series of urban and rural district councils, and was for a time medical superintendent of a temporary fever hospital in Knutsford. But Garstang was chiefly known to the medical world for his long and important association with the British Medical Association. He was a member of the council for two periods, and of the Representative Body off and on for over 20 years, while he acted as chairman of this body from 1918 to 1921. He was elected vice-president of the B.M.A. in 1926, and was at different times a member and more than occasionally chairman of important organisations and medico-political committees of the association. At the age of 70 Garstang resigned his appointments and retired from all active participation in professional affairs.

MARY ETHEL JEREMY, M.B., B.Ch. R.U.I., O.B.E.

Dr. Mary Jeremy, whose death has been announced, was the daughter of a Dublin clergyman. She received her medical education at the London School of Medicine for Women, and graduated M.B., B.Ch. from the Royal University of Ireland in 1906. After holding certain resident appointments in London she went to India on missionary service, and became staff officer at the Memorial Hospital, Ludhiana, Northern India. She returned to England during the war and held an appointment at the Southampton War Hospital, where her excellent services were recognised at the close of hostilities by appointment as O.B.E. Later she played a prominent part in various social organisations. The medical profession has lost in her a valuable member.

THE LATE FIELDING GARRISON

THE annotation on Fielding Hudson Garrison, the distinguished bibliographer who recently died, which appeared in THE LANCET last week, has brought to us a letter written by him and inspired by the review in THE LANCET of his "Introduction to the History of Medicine." The letter was addressed to the late Dr. H. P. Cholmeley, at that time assistant editor of THE LANCET, whom he had learned to be the author of our review. He writes: "A copy of THE LANCET, containing your very generous and discriminating editorial on my book on medical history, is received, and I beg to express my cordial thanks for this courtesy. In particular, I feel more than grateful that you have emphasised my primary intention of making a guide-book or handbook of the subject rather than a profound or exhaustive treatise. In spite of my explicit avowal in the preface, some reviewers in this country have taxed me with not going deeply enough into the subject. My own studies, which have been mainly bibliographical, have been sufficient to convince me that the entire field is, as you say, almost too vast to be handled by any single man, and I did not make my disclaimer in a spirit of mock-modesty." There is no doubt that Garrison's book, and the facilities offered by consultation of the Index Medicus under his editorship, led to the publication of many of the interesting biographies of the leaders of American medicine which have appeared in the last 20 years, a number of which have been reviewed in our columns.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

The Question of Decentralising Public Health in India

IN a debate on the Government of India Bill in the House of Commons on May 13th Mr. H. WILLIAMS moved to omit Public Health and Sanitation from the list of subjects to be dealt with by the provincial legislatures. Public health, he said, was not something which had any knowledge of provincial boundaries; if an outburst of bubonic plague were handled by provincial governments working separately great danger to the public health would ensue.—The Duchess of ATHOLL in supporting the amendment recalled the admirable measures proposed by the central government for preventing the extension of an epidemic from one province to another. She cited the high maternal death-rate and the scantiness of child welfare work as arguments in favour of the need of central authority.—Mr. BUTLER, Under-Secretary for India, in opposing the amendment, said that the concurrent list met the difficulty of disease which might cross provincial boundaries. Public health had been a provincial subject ever since the reforms were introduced twelve years ago, and the Government followed the Statutory Commission in its unwillingness to take away this subject from the provinces.

The differences between the provinces as regarded the incidence of disease, followed, unfortunately, provincial idiosyncrasies. The registration of infectious diseases might have to be enforced in a different way in one province from that in which it was enforced in another. It would be very difficult, in the case of any particular disease which ravaged one particular province, for the federal legislature to pass a law which necessarily suited that province. The manner of dealing with malaria in Bengal might be radically different from the manner of dealing with it, say, in the Punjab, and he was advised by the Government's experts that it would not be conducive to the extinction of malaria if they were to insist on regulation by a Central Act of the provincial treatment of malaria in different parts of India. In order to eradicate disease and have an efficient public health and sanitary service it was essential to encourage local effort and provincial autonomy in dealing with these matters. Moreover, these public health matters depended essentially on provincial finance.

It would be possible, under an item of the Federal List, for institutions for research to be governed from the centre. That matter could be governed by federal legislation. The Government considered that the most fruitful course to pursue in dealing with these problems was that of the coördination of policy between the centre and the units. Recently a department of health ha[illegible] been established in Australia entirely by the process [illegible] coördination and coöperation between the units an[illegible]ot by any artificial control from the centre. In Indi[illegible]ey hoped the future would follow much the same lines. Under Clause 133 of the Bill the Government had included the opportunity for the provinces to set up an inter-provincial council, and he hoped that further coördination in health policy might result. He had discussed this matter with Major-General Graham and others connected with public health in India.

Mr. ORMSBY GORE, First Commissioner of Works, said he devoutly hoped the Government of India would not try to impose antimalarial measures on the provinces, for it was of the utmost importance *not* to have uniformity in preventive measures dealing with malaria. In a rice-producing country they could not have too much water as a preventive; in a wheat-producing country, on the other hand, a maximum of drainage was required. Probably the greatest success in fighting malaria had been achieved by concentration in a limited area. Where the central government had adopted a sort of mass attack it had almost invariably failed. He deprecated blaming the failure of Indian Ministers to grow quinine in competition with Java, which had a monopoly because cinchona could be grown more cheaply there than in other places.

The amendment was negatived by 216 votes to 31.

Restriction of Ribbon Development

In the House of Lords on May 16th the Earl of PLYMOUTH, Under-Secretary of State for the Colonies, moved the second reading of the Restriction of Ribbon Development Bill. The main arguments in support of a measure of control of this kind were, he said, of a dual nature. There were the traffic and safety arguments and there was the æsthetic argument. Both types of argument were of great importance and together formed an overwhelming case for action. The figures showing the number of fatal and other accidents which had occurred on our roads during the last year or two were undoubtedly very alarming. In the last year over 7000 people were killed on the roads, and out of that number some three-quarters, he thought, had been killed in what were known as built-up areas. It was far too early to express any opinion at present as to whether the new 30 miles an hour speed limit recently imposed was likely to constitute a remedy for this state of affairs. He did not think that anybody suggested that in itself this or any other measure that the Government could take would alone solve the problem of casualties on our roads; but whether that was so or not the fact remained that ribbon development did create conditions which were dangerous and should therefore be checked. It was clearly undesirable, unpleasant, and obnoxious that the appearance of our highways and the beauty of the country which surrounded them should be impaired and very often entirely ruined by the disorganised, unsightly, and highly dangerous method of ribbon development. The communal aspect of the problem was another important point. It was obviously desirable to plan buildings in such a way as to establish villages or townships rather than to allow haphazard methods of providing the habitations of the community to grow up with all their resultant evils. While he could not regard as feasible any general legislation which would guarantee the public against losing at one place or another an uninterrupted view of the countryside, the Government certainly believed that it was within the sphere of practical politics to provide for the proper and orderly development of lands adjacent to the highway.

The Bill brought the control, so far as it concerned the acquisition of roads, into operation immediately on the passing of the Act. This was a point which they had been urged from many quarters to secure. This meant that the requirement of consent of the appropriate highway authority for [illegible] and for the formation of new means of ac[illegible] e line of 40,000 miles of roads, which wer[illegible] por- tant roads from the traffic point o[illegible] d be applied automatically and at once. The Government thought that it would be going too far to apply this procedure automatically to the remaining 130,000 miles of roads in the country, but they had provided in the Bill that the highway authority might in the case of any unclassified road where such control would be desirable by resolution and with the concurrence of the Minister of Transport apply the provisions of this clause to that road also. Steps would doubtless be taken while the Bill was still before Parliament to draw the attention of the highway authorities to this power so that they might be in a position to act as soon as the Bill was passed into law.

AN AMENITY BUILDING LINE

This general power of control for 220 feet on either side from the middle of the road might be conveniently described as the provision of an amenity building line. But their purpose would be incompletely achieved if this provision resulted merely in setting back to a distance of 200 feet from the highway the ribbon development. What they aimed at really was to aid the highway authority to encourage ordered development, and in particular ordered group development. At the same time it was essential to provide from the more limited traffic standpoint that on the more important routes all possible steps should be taken to safeguard land which might be required to be thrust into the highway at a later date in order to provide sufficient width of road for increased traffic requirements, including where necessary dual carriage ways, footpaths, and cycle tracks, and in appropriate cases subsidiary service roads. They were accordingly taking powers in the Bill to enable the highway authority with the Minister's approval to adopt for any highway one of a number of scheduled standard widths of the road between fences. Within the standard width the highway authority was to be empowered to prohibit buildings and works of all kinds other than defined improvements of existing buildings, and powers in default were given to the Minister of Transport in cases where the authority was held to have failed to take the necessary steps for safeguarding the line of the road required for the safe and adequate passage of traffic in the future. These powers could only be exercised by the Minister after a public inquiry. The maximum standard width set out in the Bill was 80 feet from the middle of the road, which meant an all-over width of 160 feet.

CONTRIBUTION FROM THE ROAD FUND

In so far as restriction related to the standard width line—that was the land which would be ultimately required for the purposes of the highway—the Bill proposed expressly to authorise contributions in respect of compensation to be made from the Road Fund. The Bill also gave highway authorities powers for the compulsory acquisition of land adjacent to highways for the purpose of the creation of parkways and the like. The general powers of the Bill were not only conferred on county councils but also on the councils of county boroughs. They provided also for the roads for which the councils of non-county boroughs and urban districts were responsible. The Minister of Transport was anxious to include in the Bill provision for dealing with certain urgent problems of road congestion in towns. The powers of local authorities to provide parking places were enlarged so as to enable them to provide parking accommodation for vehicles in buildings or underground.

The Government had considered very carefully whether it would in any way be practicable to make the operation of the Bill retrospective in its effect. as it has been suggested to them that recent public utterances as to the urgent need for this legislation had only spurred the ribbon developer to greater activity before a new control was imposed upon him. [illegible] that as it might—and he might say parenthetically [illegible] Government has no definite evidence that [illegible] been the case—they did not feel that they [illegible] perly immobilise all development, good as [illegible], between now and the date of the passage

OPPOSITION SUPPORT

Lord MARLEY said he supposed that everyone who had driven on the by-pass roads must have seen the dangers to traffic of the building up of these small houses close alongside roads which were intended not for small houses but for rapid traffic. They saw that every day the damage was extending and that the spread out along the main thoroughfares of ribbon development now taking place on all the most important roads aroused serious concern and called for immediate action. The remedy for these difficulties was in the development of the group system of building houses. The large development of the group system—the development of satellite towns—was again a system for preserving the great through roads for rapid traffic and for making easier and cheaper the supply of services to the new communities. The Opposition had decided that—in spite of the fact that there were naturally from their point of view imperfections in the Bill—in order in every possible way to expedite its passage through the House they would move no amendments. They appealed to the Government to be prepared to consider this only as a preliminary Bill, to be followed by an amending Bill to meet any deficiencies or defects in the working of the present measure.

The Bill was read a second time and committed to a Committee of the whole House.

Foot-and-Mouth Disease Research

In the House of Lords on May 21st Lord STRACHIE raised the question of the recent serious outbreak of foot-and-mouth disease in Dorset, and mentioned that it was desirable that the Minister of Agriculture should have power to prohibit the introduction of hay and straw or other imports into Great Britain from countries where foot-and-mouth disease was known to exist. He said that recent outbreaks had cost the country £70,000 for the slaughter of 5418 animals.—Earl DE LA WARR, Parliamentary Secretary to the Ministry of Agriculture, in his reply, said that the fact probably was that with regard to all these outbreaks there was a great variety of causes, but never had it been possible to trace infection to any one source. A foot-and-mouth disease research committee under the chairmanship of Dr. Arkwright had been examining the question. They have been particularly studying immunity and it was hoped that they would shortly issue an interim report on the source of the disease. If anything transpired from the investigation the Government would not be slow to take up any suggestions and put them into effect.—The motion was withdrawn.

HOUSE OF COMMONS

WEDNESDAY, MAY 15TH

Hospital Accommodation in Palestine

Captain STRICKLAND asked the Secretary of State for the Colonies whether he was aware that inhabitants of Tel-Aviv, Palestine, in need of hospital treatment, had in many cases to be transferred to hospitals in other parts of the country because of lack of available beds in the municipal hospital; and whether he was yet in a position to state if the government had decided to accede to the request of the municipal authority of Tel-Aviv to be permitted to provide the necessary additional and improved accommodation.—Sir PHILIP CUNLIFFE-LISTER replied: I am not in a position to confirm the statement contained in the first part of the question. As promised in my answer to a question on April 3rd, I have communicated with the High Commissioner for Palestine, but I have not yet received information as to the intentions of Government regarding the proposals for financing the enlargement and improvement of the hospital. I should add that during last year this hospital, to the cost of which the Government contributes, was enlarged from 125 to 184 beds.

National Health Insurance: New Bill Promised

Miss WARD asked the Minister of Health whether he was yet in a position to make a statement regarding the Government's proposals for dealing with persons who had fallen out of national health insurance.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend hopes to introduce legislation on this subject very shortly.

Miss WARD: Is the hon. Member in a position to say that the medical side will be considered, as this matter is causing great anxiety to a number of people?

Mr. SHAKESPEARE: I do not think my hon. friend will have long to wait, but I cannot anticipate the terms of the Bill.

Mr. G. GRIFFITHS: Will the maternity side be considered?

Mr. RHYS DAVIES: May we take it that the Bill will be passed through all its stages before the end of July?

Mr. SHAKESPEARE: Obviously I cannot guarantee that, but we should like it to do so.

Diphtheria in Leeds

Mr. GROVES asked the Minister of Health whether there had been any deaths from diphtheria in Leeds children who had at any time been inoculated against diphtheria; and (2) if he would state the number of children under 15 years of age in Leeds who were inoculated against diphtheria in each of the years 1928, 1929, 1930, 1931, 1932, 1933, and 1934; the number of those inoculated in these years who gave the final Schick-negative test; and the number of those who, having been inoculated and given final Schick-negative tests, contracted diphtheria in each of these years.—Sir HILTON YOUNG replied: The following is the information furnished by the local authority on this subject:—

Year.	Children under 15 years inoculated.	Those inoculated who gave final Schick-negative test.	Those inoculated with final Schick-negative tests who contracted diphtheria.	Deaths from diphtheria in Leeds children who had been inoculated against diphtheria.
1928	92	65	Nil	Nil
1929	101	73	Nil	Nil
1930	174	152	Nil	Nil
1931	602	202	Nil	Nil
1932	1874	1379	6	Nil
1933	1372	1030	1	Nil
1934	2773	2226	4	Nil
Totals	6988	5127	11	Nil

THURSDAY, MAY 16TH

Industrial Disease as an "Accident"

Mr. TINKER asked the Home Secretary if he was aware that persons who had had industrial disease were being refused employment when they signed that they had had it; and would he consider amending Section 9 (4) of the Workmen's Compensation Act so as to make it clear that the word injury included disease, so as to enable those who were unable to get employment through having had an accident or industrial disease should be treated the same.—Sir JOHN GILMOUR replied: I am aware that colliery owners often refuse employment to men who have had nystagmus, but as explained in previous replies, the issue is by no means a simple one, and in my opinion a full inquiry into this and other questions connected with the payment of compensation for this disease would be necessary before any amendment of the law could be usefully considered.

Mr. T. SMITH: Is it the intention of the right hon. gentleman to institute an inquiry, in view of what has taken place in various parts of the country?

Sir J. GILMOUR: All I can say is that the matter is being very carefully considered at the present time.

Health Insurance (Dental Benefit)

Captain CUNNINGHAM-REID asked the Minister of Health whether, as persons insured under the national health insurance scheme were ineligible for dental treatment until they had been paying contributions for over four years, and in view of the importance of early treatment in dental cases, especially among young persons, he would consider the alteration of these regulations.—Sir Hilton Young replied: Under the National Health Insurance Acts dental benefit is not included in the statutory benefits to which all insured persons are entitled, but is an additional benefit which may be provided by an approved society having a disposable surplus as a result of a quinquennial valuation. An insured person becomes entitled to dental benefit at the beginning of the third year following that in which he joins a society providing the benefit. In fixing this waiting period regard has been had to the considerations referred to by my hon. friend, but I am afraid that any further shortening of the period would be open to serious objection not only on administrative and financial grounds but also from the point of view of equitable distribution of the surplus amongst the members of the societies.

Milk Marketing Board

Major Carver asked the Minister of Agriculture what additional percentage of milk was being handled by the Milk Marketing Board compared with the amount handled when it started its operations.—Mr. Elliot replied: The average daily quantity of milk sold under wholesale contracts during the six months ended March 31st, 1935, showed an increase of 17¾ per cent. on the average daily quantity in the corresponding period of the previous year. The quantity sold under wholesale contracts in April, 1935, was 23 per cent. more than that sold in April, 1934. The information is not available which would permit a comparison between the volume of sales by producer-retailers in the six months ended March 31st, 1934 and 1935 respectively, and therefore I am unable to give a figure representing the percentage increase in the total supplies of milk coming under the Milk Marketing Scheme then and now.

Disease Carriers

Captain Erskine-Bolst asked the Minister of Health how many human disease-carriers were known to his department; what diseases were thus carried; and what was the general policy of his department with respect to the surveillance of such cases.—Sir Hilton Young replied: The number of human disease-carriers about whom information is available in my department is necessarily small, but I am advised that most infectious diseases are capable of being carried in this way, and that all persons may be carriers of some disease at one time or another, though not of course necessarily responsible for the spread of the disease. The policy of my department is that known carriers of disease should not engage in any occupation which would render them a special source of danger to the public.

Mr. Groves asked the Minister of Health what precautions were taken by medical officers of health to make sure that they themselves were free from infection by the hæmolytic streptococcus and could themselves carry the contagion.—Sir Hilton Young replied: I am advised that the best and perhaps the only precautions that can be taken are those measures for preserving surgical cleanliness that are familiar to medical practitioners.

MONDAY, MAY 20TH

The Training of Hospital Nurses

Mr. Remer asked the Minister of Labour whether he was aware that there was a shortage of trained hospital nurses; and if he would consider allocating some portion of public funds in the distressed areas to educate and train a limited number of suitable girls as hospital nurses either in the great hospitals locally or in hospitals in the south of England.—Mr. R. S. Hudson, Parliamentary Secretary to the Ministry of Labour, replied: I am aware that there is some shortage of trained hospital nurses in certain places. I understand, however, that the shortage is not due to any lack of training facilities as in the majority of hospitals the training is provided free.

Prevention of River Pollution

Captain Cunningham-Reid asked the Minister of Health whether the Government had yet begun to prepare a River Pollution Prevention Bill; whether it was hoped that such a Bill would prove to be non-controversial; and when it was proposed to be introduced.—Mr. Shakespeare replied: My right hon. friend presumes my hon. friend's reference is to a Bill to provide for the reception of trade effluents into sewers. The state of Parliamentary business precludes any measure this session, but my right hon. friend has in mind the case for such a measure, and, while he cannot say that it would be without controversy, he hopes that the negotiations which have taken place will result in substantial agreement.

TUESDAY, MAY 21ST

Inquiries into Maternal Deaths

Colonel Clifton Brown asked the Minister of Health if he had considered the suggestion made at the annual meeting of the Carlisle and District Nursing Association, to which his attention had been drawn, that inquests should be held on every maternal death in order to draw public attention to the many avoidable causes of these fatalities; and what action he proposed to take in the matter.—Mr. Shakespeare replied: This suggestion was considered by the Departmental Committee on Maternal Mortality and Morbidity, who did not advocate its adoption (Final Report, pp. 26–27). The committee advised that local authorities should be urged to continue the arrangements by which medical officers of health make inquiries into maternal deaths and furnish confidential reports to the chief medical officer of my department. My right hon. friend has taken action accordingly.

Methylated Spirit Drinking

Mr. Leckie asked the Home Secretary whether he had considered a communication from Dr. Percy Turner, chief medical officer of the Salvation Army, on methylated spirit drinking; and whether, in view of the facts therein described, he proposed to carry out the suggestions made for dealing with the problem.—Mr. Duff Cooper, Financial Secretary to the Treasury, replied: I have seen a copy of the *British Journal of Inebriety* containing an article by Dr. Turner, in which he suggests that changes in the denaturing of methylated spirits might be considered. The matter is one which engages constant attention, but on the evidence at present available I am not satisfied that any alteration is expedient.

L.C.C. HOSPITALS

The one-storey building at Hammersmith Hospital to provide suites of offices for three professors, four laboratories, and a students' common room is to be proceeded with at once, the Minister of Health having consented to the alienation of the land. The cost will be borne by the medical school.

An out-patient department has been opened at Five Elms on the Becontree estate as an adjunct to the King George Hospital at Ilford, from which doctors, nurses, and masseurs will be supplied. The Becontree health centre and out-patient department, as it is called, will provide for the treatment of accidents and other casualties, and certain minor ailments.

Some forthcoming changes of staff are announced. Dr. J. H. Whitaker, medical superintendent of the Grove Hospital, and one of the Council's small-pox diagnosis consultants, will shortly retire under the age limit. He entered the service of the M.A.B. 38 years ago. Dr. J. S. Anderson will take his place. Dr. Maurice Mitman is to be promoted to be a divisional officer in the public health department; he is at present deputy medical superintendent and radiologist at the North Eastern Hospital. Dr. A. D. Morris, at present senior assistant medical officer at the Hammersmith Hospital, will become medical superintendent of St. Leonard's Hospital and acting master of the institution.

MEDICAL NEWS

University of Cambridge

On May 17th the following degrees were conferred :—

M.D.—Henry Barcroft and G. H. Day.

M.B., B.Chir.—F. H. Coleman.

English Conjoint Board

At the recent final examination of the Board the following candidates were approved in the subjects indicated, but are not yet eligible for the diplomas of the Colleges :—

Pathology.—R. B. Abdel-Messih, St. George's ; H. L. Ackerman, Lond. ; I. Affleck, Charing Cross ; S. G. Alavoine, Lond. ; M. M. Ali, St. Bart.'s ; G. A. Armstrong, Westminster ; J. H. Armstrong, St. Bart.'s ; S. Balasingan, King's Coll. ; S. Ball, Liverp. ; H. D. G. Barnes, Lond. ; J. E. M. Barnes, St. Mary's ; H. H. F. Barns, Univ. Coll. ; Mary J. Bartlett, Roy. Free ; P. N. Baruah, Manch. ; L. Bass, Middlesex ; A. B. Baxter, Guy's ; S. L. Bhatia, Roy. Free ; K. O. Black, St. Bart.'s ; G. N. Blackburn, Leeds ; B. E. Blair, St. Thos. ; F. A. Bleaden, Guy's ; Katherine M. Blenkin, Roy. Free ; K. E. Bond, Camb. and St. Thos. ; J. C. B. Bone, Middlesex ; T. F. Bostock, St. Bart.'s : C. M. Bowker, St. George's ; J. D. Bradley-Watson, St. Bart.'s ; W. G. Brander, Camb. and St. Thos. ; G. C. Brentnall, St. Bart.'s ; A. J. Broomhall, Lond. ; A. G. T. Brown, Guy's ; J. C. Brundret, Manch. ; D. H. D. Burbridge, Middlesex : P. J. Burke, Manch. ; W. A. Burnett, Middlesex ; J. C. Busby, Camb. and St. Mary's ; Josephine H. Campbell, King's Coll. ; N. R. Chan-Pong, Birm. ; L. S. S. Chiew, Singapore ; Priscilla B. Clark, Univ. Coll. : E. P. Clarke, St. Bart.'s ; R. R. Clipstein, St. Mary's ; D. H. Coe, King's Col. ; C. D. Coode, Oxon and Lond. ; G. F. Crickmay, St. Thos. ; M. Curwen, and S. Curwen, Middlesex ; V. R. Damle, Bombay and Lond. ; C. S. Darke, Guy's ; A. B. Dempsey, Lond. ; P. R. Dias, King's Coll. ; E. N. Dowell, St. Mary's ; T. P. Eddy, Oxon and Middlesex ; Dora J. B. Falconer, Roy. Free ; M. Fallon, Dubl. ; D. I. Forster, Roy. Free ; I. M. Fradkin, Lond. ; W. G. France, Leeds ; Joan R. Franklin, Roy. Free ; D. F. Freebody, Guy's ; E. D. B. Freedman, Westminster ; P. R. Gavin, St. Thos. ; D. R. Gibson, St. Mary's ; R. E. Gibson, St. Bart.'s ; J. F. Goodall, Camb. and Leeds ; J. A. T. Griffiths, Guy's ; J. A. G. Gulliford, Cardiff ; G. S. C. de S. Gunasekera, Ceylon and West Lond. ; J. L. Haber, St. Mary's ; A. B. Hamer, and L. B. Hardman, Manch. ; J. C. Harland, Westminster ; H. R. S. Harley, Guy's ; F. Harrison, Liverp. ; J. Heginbotham, Manch. ; A. G. Hemsley, Middlesex ; L. Henig, St. Bart.'s ; M. C. B. Heyns, Univ. Coll. ; F. Hirschman, St. George's ; W. Hobson, Leeds ; R. A. Hoey and C. S. Humphries, St. Thos. ; B. W. Hunt and S. Jackson, Guy's ; Gwyneth M. Jenkyn-Owen, Roy. Free ; H. D. Johnson, Camb. and St. Thos. ; S. J. Johnson, Univ. Coll. ; A. C. Jones and H. G. Jones, Middlesex ; I. Kelnar, St. Bart.'s ; A. R. Kelsall, Camb. and St. Bart.'s ; H. M. Kelsey, Guy's ; A. S. Kerr, Liverp. ; K. Inamulla, Cardiff ; G. M. Komrower, Manch. ; J. W. Lacey, Camb. and Lond. ; L. R. Leask, St. Bart.'s ; R. B. Leech, Camb. and Lond. ; D. M. Leiberman, Leeds ; J. I. Lesh, St. Thos. ; J. L. Lewis, Lond. ; S. E. Littlepage and J. M. Lockett, St. Bart.'s ; S. W. Longthorne, Charing Cross ; J. F. Loutit and R. D. McDonald, Lond. ; K. G. F. Mackenzie, St. Thos. ; J. A. Mansi, St. Bart.'s ; S. Marinker, Middlesex ; K. H. A. Marshall, Oxon and St. Mary's ; Ivy Massick, Delhi ; W. V. Maughan, Middlesex ; S. C. Mehta, Lond. ; I. H. Milner and M. Mirsky, Charing Cross ; J. R Monks, Manch. ; T. J. Morton, Camb. and Charing Cross ; F. L. E. Musgrove, Guy's ; T. P. Myles, Camb. and St. Mary's ; M. L. Nairac, St Bart's ; W. S. A. Oakes, Leeds ; J. D. Ogilvie and W. A. Oliver, St. Bart.'s ; Helen M. C. Palmer, Univ. Coll. ; J. G. Parekh, St. George's ; D. E. Parry, St. Mary's ; E. N. Pearlman, Middlesex ; J. Pemberton, Univ. Coll. ; R. Petticrew, Leeds ; W. M. Philip, Guy's ; P. M. J. Phillips, King's Coll. ; R. J. Porter, Camb. and Lond. ; I. H. Premdas and R R. Prewer, St. Bart.'s ; D. E. Price, St. Mary's ; O. N. Ransford, Middlesex ; G. Rogers, Lond. ; B. M. D. Rosten, K. G. Rotter, and A. N. Roy, St. Bart.'s ; W. A. Royds, Manch. ; R. G. Samuel, St. Bart.'s ; S. H. Samuel, Leeds ; L. J. Sandell, St. Bart.'s ; E. Sayle, Guy's ; F. Schwartz, Charing Cross ; P. G. Scott, Camb. and Univ. Coll. ; G. N. Sen, West Lond. ; R. G. Silver, Oxon and Middlesex ; I. Singh, Rangoon ; M. R. Singh and A. Skolar, Middlesex ; T. Smallhorn, St. Bart.'s ; J. Stern, Lond. ; W. Stoddart, St. Bart's ; C. H. Tanner, Cardiff ; R. N Tattersall, Leeds ; F. B. Thomas, St. Thos. ; T. A. Turnbull, Guy's ; J. E. Underwood, St. Bart.'s ; W. H. Valentine, Camb and St. George's ; C. S. van Heerden, Lond. ; Rosemary C. Walker, Roy. Free ; J. H. Ward, Camb. and St. Bart.'s ; S. A. Way, Middlesex ; Norah E. Weatherhead, Roy. Free ; H. Weiner, St. Bart.'s ; W. R. Welply, Lond. ; D. O. Wharton, Camb. and Manch. ; E. H. L. Wigram, Camb. and St. Thos. ; D. J. Wilkes, Birm. ; R. R. Willcox, St. Mary's ; Sheila M. R. Williams, Roy. Free ; Louise F. Wilson, West Lond. ; L. A. C. Wood, Camb. and St. Thos. ; Rowena Woolf, Roy. Free ; G. N. Wright, Guy's ; and G. F. Wright, Camb. and St. Thos.

Medicine.—W. J. C. Anstie, Oxon and St. Thos. ; K. E. Barlow, Middlesex ; Mary J. Bartlett, Roy. Free ; H. B. Birnbaum, Glasg. ; A. C. Blandy, Camb. and Lond. ; A. S. Bookless, Guy's ; R. F. Braithwaite, St. Bart.'s ; Margaret C. Briggs, Roy. Free ; A. J. [illegible] P. Brown, St. Bart.'s ; J. G. Clothier, Kin [illegible] Univ. Coll. ; B. Cohen, Charing Cross ; F. [illegible] ; D. Craig, St. Bart.'s ; V. R. Damle, Bombay and Lond. ; W. H. H. J. de W. de Wytt, Dubl. ; R. C. Dolly, St. Bart.'s ; E. W. Dorrell, Camb. and St. Bart.'s ; C. M. Dransfield, St. Bart.'s ; L. S. Dymond, Cardiff ; K. G. Eckersley, Leeds ; S. Fomon, Illinois ; Daireen I. Forster, Roy. Free ; O. P. Frank, St. George's ; R. E. Gibson, St. Bart.'s ; B. M. Goldsworthy, St. Thos. ; J. F. Goodall, Camb. and Leeds ; F. Harrison, Liverp. ; Sylvia A. M. Herford, Roy. Free ; R. S. Hunt, Camb. and St. Bart.'s ; N. W. Irish, Guy's ; E. C. O. Jewesbury, Oxon and St. Bart.'s ; W. H. G. Jones, Birm. ; H. S. Joseph, St. Bart.'s ; A. R. Kelsall, Camb. and St. Bart.'s ; A. R. Kennedy, St. Bart.'s ; A. S. Kerr, Liverp. ; P. T. Liem, St. Thos. ; S. E. Littlepage, St. Bart.'s ; D. N. Matthews, Camb. and Charing Cross ; Dorothy V. Mazel, Sydney and Roy. Free ; S. C. Mehta, Lond. ; P. J. W. Mills, St. Bart.'s ; A. H. G. Munro, Durham ; N. W. N. Murray, King's Coll. ; W. A. Oliver, St. Bart.'s ; S. Paletz, St. George's ; W. D. Park, St. Bart.'s ; G. E. Paxon, Guy's ; E. J. Perks, Bristol ; J. Rabinovitch, Leeds ; J. D. Raftery, St. Mary's ; S. J. R. Reynolds, Camb. and Charing Cross ; E. A. Richards, St. Thos. ; E. B. Rowe, Guy's ; Millicent I. Rowland, Roy. Free ; R. S. Saxton, Camb. and St. Bart.'s ; M. Schwartz, Univ. Coll. ; C. Segalov, King's Coll. ; S K. Sen, Birm. ; M. R. Singh, Middlesex ; A. R. M. Waffarn, Ceylon and King's Coll. ; G. L. Wainganker, Bombay and Manch. ; Louise F. Wilson, Yale and West Lond. ; J. R. J. Winter, Camb. and St. Bart.'s ; Rowena Woolf, Roy. Free ; and A. W. Woolley, Bristol.

Surgery.—H. L. Ackerman, Lond. ; S. N. Ahmed, Birm. ; Margaret Ball, Roy. Free ; Kathleen R. Barker, Roy. Free ; R. D. I. Beggs, Middlesex ; Katherine M. Blenkin, Roy. Free ; N. H. Bloom, St. Bart.'s ; F. Braithwaite, Camb. and St. Bart.'s ; A. C. Brewer, Liverp. ; L. D. Brice, Manch. ; B. B. Bridges, Camb. and Guy's ; G. L. Broderick, Camb. and St. Thos. ; L. H. Buckland, St. Bart.'s ; Kathleen E. Burnell, Roy. Free ; J. A. B. Burnett, Charing Cross ; W. A. Burnett, Camb. and Middlesex ; R. J. F. Campbell, Guy's ; W. W. Cashmore, Camb. and Guy's ; J. H. Caverhill, St. Thos. ; N. R. Chan-Pong, Birm. ; P. W. Clarkson, Guy's ; F. C. Collingwood, Bristol ; C. D. Coode, Oxon and Lond. ; R. N. B. Cridland, Oxon and St. Mary's ; N. Cruickshank, Camb. and Lond. ; G. M. Curtois, Guy's ; R. D. L. Davies, Middlesex ; A. B. Dempsey, Lond. ; T. Denness, St. Thos. ; J. F. Dow, Camb. and Middlesex ; C. A. Dowding, Camb. and King's Coll. ; N. P. Eskell, Camb. and Bristol ; R. B. Evans, Lond. ; R. D. Ewing, Camb. and Middlesex ; J. V. L. Farquhar, St. Bart.'s ; T. S. R. Fisher, Camb. and Birm. ; S. Fomon, Illinois ; I. M. Fradkin, Lond. ; C. B. Franklin, St. Bart.'s ; G. L. Gale and J. G. Garman, Birm. ; S. Glaser, Cape and Lond. ; J. F. Goodall, Camb. and Leeds ; S. G. Gordon, Charing Cross ; C. N. Gosse, Camb. and St. Mary's ; Irene G. Hamilton, Bristol ; P. B. Hanbury and M. J. Harris, Guy's ; G. D. Harthan, Manch. ; C. W. M. Harvey, St. Thos. ; J. Heginbotham, Manch. ; N. J. P. Hewlings, Camb. and St. Bart.'s ; Emily C. Hill, Liverp. and West Lond. ; R. E. Hirson, Manch. ; G. A. Hodgson, Oxon and St. Thos. ; C. C. Houghton, Birm. ; T. G. Humby, Guy's ; M. I. Husain, Osmania and Lond. ; C. A. Hutt, St. Mary's ; H. D. Johnson, St. Thos. ; W. W. B. Kelly-Wiseham, Middlesex ; T. B. Kenderdine, Birm. ; J. R. Kerr, Camb. and St. Thos. ; K. C. Kershaw, Manch. ; D. B. Kulkarni, Lond. ; M. J. Lange, Guy's ; J. I. Lesh, St. Thos. ; M. J. Levi, Leeds ; H. Levitt and M. Lipson, Charing Cross ; O. G. Lloyd, Univ. Coll. ; J. F. Loutit, Lond. ; A. A. Lovell, Birm. ; W. R. Merrington, Univ. Coll. ; S. Meyers, King's Coll. ; C. R. Morison, Camb. and St. Bart.'s ; L. F. Muldavin, St. Mary's ; E. G. Murphy, Univ. Coll. ; W. G. Murray-Browne, St. Thos. ; S. G. Nardell, St. George's); J. B. Neal, Westminster ; J. G. Parekh, St. George's ; W. Parke, Liverp. ; A. D. Petro, Camb. and St. George's ; E. H. D. Phillips, Camb. and St. Bart.'s ; T. D. Pilcher, Camb. and St. Thos. ; R. J. Porter, Camb. and Lond. ; D. A. Prothero, St. Bart.'s ; R. G. Record, Birm. ; H. W. Rees, Middlesex ; M. S. Richmond, Leeds ; C. G. Rob, Camb. and St. Thos. ; B. Roberts, St. Mary's ; G. S. Robinson, Camb. and Liverp. ; P. A. Robinson, Camb. and Middlesex ; P. W. D. Russell, St. Thos. ; A. E. K. Salvi, Guy's ; H. V. Sansom, St. Bart.'s ; P. G. Scott, Camb. and Univ. Coll. ; G. N. Sen, West Lond. ; N. S. Shtetinin, Manch. ; D. Singh, Birm. ; G. C. Smith, St. George's ; Elsie M. Smyth, Univ. Coll. ; J. B. Spearman, Guy's ; A. C. Spence, Camb. and Middlesex ; S. Stein, St. Mary's ; Eunice Sterling, Rochester, U.S.A. ; J. M. Stewart, St. Bart.'s ; A. Stoller, Univ. Coll. ; T. H. Taylor, Bristol ; D. W. I. Thomas, St. George's ; H. C. Thomas, Lond. ; R. M. Thornton, St. Thos. ; J. D. B. Vaile, St. Thos. ; C. W. H. Van der Post and J. T. Waldie, Guy's ; S. A. Way, Middlesex ; W. R. Welply, Lond. ; C. E. G. Wickham, St. Thos. ; B. L. Williams, Camb. and St. Thos. ; Sheila M. R. Williams, Roy. Free ; Eugenie L. Willis, Camb. and Roy. Free ; J. D. Wilson, St. Bart.'s ; G. N. M. Wishart, Manch. ; J. E. Wooding, Camb. and St. Bart.'s ; and P. M. Wright, St. Bart.'s.

Midwifery.—H. Acton, Middlesex ; M. M. Ali, St. Bart.'s ; G. A. Armstrong, Westminster ; J. D. F. Armstrong, St. Mary's ; S. Balasingan, King's Coll. ; D. R. Balcombe-Brown, Oxon and St. Thos. ; H. F. Barnard, Westminster ; P. N. Baruah, Manch. ; R. H. Bembridge, King's Coll. ; A. M. Bennett, Charing Cross ; L. J. Blay, Guy's ; D. Bobker, Charing Cross ; A. W. Bone, Camb. and Lond. ; J. C. B. Bone, Middlesex ; R. E. Bonham-Carter, St. Thos. ; F. Braithwaite, Camb. and St. Bart.'s ; Margaret C. Briggs, Roy. Free ; R. H. W. Britton, St. Thos. ; G. R. H. Brown, Lond. ; J. L. Brown, Liverp. ; D. H. D. Burbridge, Middlesex ; A. Z. Butt, St. Bart.'s ; R. J. F. Campbell, Guy's ; R. S. Castle, St. Thos. ; J. G. Clothier, King's Coll. ; B. Cohen, Charing Cross ; E. R. Coleman, Univ. Coll. ; T. K. Cooke, Leeds ; J. D. Cooper, Camb. and Lond. ; Gwendolen K. G. Coote, Univ. Coll. ; N. Cruickshank, Camb. and Lond. ; M. Curwen, Middlesex ; L. F. Dale, St. Bart.'s ; C. S. Darke, Guy's ; H. K. Dastur, St. Bart.'s ; C. W. Dixon and G. G. Doel, King's Coll. ; E. N. Dowell, St. Mary's ; V. K. Drennan, Liverp. ; R. W. Dunn, St. Bart.'s ; L. S. Dymond, Cardiff ; T. P. Eddy, Middlesex ; N. P. Eskell, Camb. and Bristol ; C. D. Farris, Guy's ; E. L. Fisher, St. Bart.'s ; W. A. J. Fox, Westminster ; D. F. Freebody, Guy's ; E. D. B. Freedman, Westminster ; G. L. Gale, Birm. ; T. H. T. Gautby, Camb. and Middlesex ; A. C. Gee, Westminster ; Joyce M. George, King's Coll. ; A. W.

Gibbons, Guy's; P. W. D. Goddard, St. Thos.; J. B. M. Green, Oxon and St. Thos.; L. Greenbaum, Lond.; S. G. Griffin, Liverp.; J. A. T. Griffiths, Guy's; Ann A. Guest, Birm.; G. N. St. J. Hallett, St. Thos.; J. C. Harland, Westminster; H. R. S. Harley, Guy's; G. D. Harthan, Manch.; W. H. Hayes, Bristol; A. G. Hemsley, Middlesex; Sylvia A. M. Herford, Roy. Free; A. G. W. Hill, Guy's; C. F. L. Hill, St. Mary's; W. A. T. Hill, Liverp.; C. C. Houghton, Birm.; W. Hughes and B. W. Hunt, Guy's; G. C. W. James, St. Thos.; Gwyneth M. Jenkyn-Owen, Roy. Free; R. A. Johnson, Guy's; A. C. Jones, Middlesex; H. W. E. Jones, Liverp.; P. P. Jonescu, St. Bart.'s; D. Joy and S. Kaufman, Univ. Coll.; F. P. Kay, Manch.; R. G. M. Keeling, St. Mary's; H. M. Kelsey, Guy's; A. S. Kerr, Liverp.; D. E. Kessler and F. B. Kiernander, St. Thos.; E. W. Knowles, Liverp.; J. W. Lacey, Camb. and Lond.; W. J. Latham, Lond.; S. A. H. Lesser, Camb. and St. Bart.'s; J. L. Lewis, Lond.; R. N. A. Leyton, Camb. and Westminster; Ethna W. Little, Liverp.; R. G. M. Longridge, Camb. and St. Thos.; J. F. Loutit, Melb. and Lond.; L. McAskie, St. Bart.'s; I. B. McCrae, Charing Cross; J. A. V. McCrea, Cardiff and Lond.; R. D. McDonald, Cape and Lond.; W. P. Mallinson, St. Thos.; J. A. Mansi, St. Bart.'s; S. Marinker, Middlesex; M. S. Marks, Glasg.; H. A. C. Mason, St. Thos.; Ivy Massick, Roy. Free; W. V. Maughan, Middlesex; G. B. Miller, Birm.; H. C. B. Milne, Camb. and Westminster; M. Mirsky, Charing Cross; A. G. Moore, St. Thos.; D. C. Moore, Manch.; C. R. Morison, St. Bart.'s; J. E. Morrish, St. Mary's; R. Mundy, St. Bart.'s; E. G. Murphy, Univ. Coll.; W. G. Murray-Browne, St. Thos.; F. L. E. Musgrove, Guy's; E. Nashid, Cairo and West Lond.; J. A. V. Nicoll, St. Bart.'s; B. P. Niyogi, Calcutta and West Lond.; Eleanor M. F. O'Donovan, Roy. Free; Maude A. Parfitt, Univ. Coll.; W. Parke, Liverp.; D. E. Parry, St. Mary's; D. N. Parry, St. Thos.; E. N. Pearlman, Middlesex; Nora M. Pettitt, Roy. Free; D. N. Philip, St. Bart.'s; W. M. Philip, Guy's; P. M. J. Phillips, King's Coll.; E. D. Pond, Charing Cross; Dorothy S. Pope, Roy. Free; H. L. Porter, St. Thos.; I. H. Premdas, St. Bart.'s; J. S. Price, Birm.; M. Price, King's Coll.; A. R. Pritchard, Liverp.; C. N. Pulvertaft, Camb. and St. Thos.; R. F. Raynes, St. Mary's; E. W. Rees, St. Thos.; Florence G. Richards, Birm.; K. E. O. Ringdahl, St. Bart.'s; C. G. Rob, St. Thos.; O. N. Roussel, Camb. and St. Thos.; Millicent I. Rowland, Roy. Free; C. Royle, Manch.; L. M. Rubein, Lond.; J. W. R. Sarkies, St. Thos.; M. Schalat, Lond.; G. E. B. Scott, Camb. and Univ. Coll.; P. G. Scott, Univ. Coll.; J. S. H. Scott, St. Mary's; J. A. Seymour-Jones, St. Thos.; N. S. Shtetinin, Manch.; A. R. Sibbald, Liverp.; R. G. Silver, Oxon and Middlesex; R. Solley, Camb. and Lond.; G. C. Steel, Middlesex; A. Stoller, Univ. Coll.; L. D. Stone, Manch.; F. J. E. Stuhl, Westminster; K. H. Sugden and R. H. A. Swain, St. Bart.'s; J. R. Sweeting, Univ. Coll.; R. N. Tattersall, Leeds; R. F. Townsend, Westminster; R. G. Tuke, St. Thos.; W. H. Valentine, Camb. and St. George's; G. J. van der Merwe, Guy's; T. van der Walt and C. S. van Heerden, Lond.; G. G. Waldin, St. Bart.'s; J. O. Walters, Univ. Coll.; J. H. Ward, Camb. and St. Bart.'s; C. P. Warren, Lond.; Norah E. Weatherhead, Roy. Free; S. Weinstock, Lond.; Elizabeth H. Western, King's Coll.; E. H. L. Wigram, St. Thos.; R. R. Willcox, St. Mary's; O. G. R. H. Williams, Westminster; H. L. L. Wilson, Leeds; J. D. Wilson, St. Bart.'s; Ursula W. Wood, Bristol; and G. F. Wright, St. Thos.

Royal College of Physicians of London

A Leverhulme research scholarship will shortly be awarded by the College for the investigation of "some problem of disease in any branch of medicine." Applications should reach the assistant registrar at the College, Pall Mall East, S.W. 1, before June 10th. Further particulars will be found in our advertisement columns.

Pharmaceutical Society

At a meeting of this society held on May 15th it was announced that as the leases of its present premises are coming to an end it has been decided to erect a new building. A freehold site in Brunswick-square was acquired by the society in 1929, and the estimated cost is £195,000.

Royal College of Surgeons of Edinburgh

At a meeting of the College, held May 15th, with Dr. A. H. H. Sinclair, the president, in the chair, the following candidates having passed the requisite examinations were admitted to the fellowship :—

Norman Stannus Gunning, M.B. Adelaide; John Alexander Baty, M.B. Edin.; Alan John Stuart Lawson Boyd, M.R.C.S. Eng.; William Huntly Chambers, M.D., Ontario; Robert Cochran, M.B. Glasg.; David Kenneth Crawford, M.B. Edin.; Howard Roderick Duval, M.D. Ontario; Henley Henderson Harrison, M.B. Sydney; Murray Hamilton Heycock, M.B., N.Z.; Ewen Alistair Jack, M.B. Edin.; Alexander Lewen Mackenzie, M.D. Toronto; David James MacRae, M.B. Edin.; Gerard Brendan Malone-Lee, M.R.C.S. Eng.; Thomas Love Masterson, M.D. St. Andrew's; Arthur Ralph Rex Mears, M.R.C.S. Eng.; Michael Robert Sheridan, M.B. Liverp.; Ian Scott Smillie, M.B. Edin.; and Ernest Thompson, M.R.C.S. Eng.

The following candidates received the higher dental diploma :—

R. D. Johnston, S. C. Scarsdale Brown, C. A. Palk, H. S. R. Sarson, and A. O. Sutcliffe.

Imperial Cancer Research Fund

Dr. William Ewart Gye, M.D. Edin., will succeed Dr. J. A. Murray, F.R.S., as director of the fund on the latter's retirement at the end of this year.

Dr. W. E. Gye was born in 1884 and educated at the Risly Latin School and the University of Edinburgh, where he qualified M.B. in 1912, taking the M.D. in 1913. As a student he won many prizes and scholarships, and immediately after qualifying joined the staff of the pathology department of the University of Edinburgh under Prof. J. Lorrain Smith. In 1913 Dr. Gye came to London to work in the laboratories of the Imperial Cancer Research Fund. In 1914 he joined the R.A.M.C. and served as a captain in France and Italy in charge of field laboratories and at the War Office. On demobilisation he returned to his post at the Imperial Cancer Research Fund for a few months, and in 1919 joined the staf [illegible] Council at the National Institute for M [illegible] stead. His scientific publications [illegible] mostly concerned with anaerobic infections and the ætiology of silicosis, and in cancer research with filtrable tumours.

The Silver Jubilee Exhibition

The exhibition, which will be open to the public on June 1st, will consist of illustrations of the work of local government for the past 25 years, and will probably include demonstrations by various classes of schoolchildren. The public health department will have exhibits of equipment now and 25 years ago, and discourses on the great progress illustrated by the exhibition will be given.

The Ambulance Service on Jubilee Day

The number of casualties dealt with by the accidents section of the London Ambulance Service on May 6th was 244 in response to 230 calls, the highest recorded since the "great slide" of Dec. 21st, 1927, when London streets froze after rain and over 2000 casualties occurred within an hour or two. The average time in reaching cases from the time of call was 6·2 minutes, and this achievement was rendered possible by the new organisation which enables the number of available ambulances to be increased from 18 to 32 on emergency. The only serious case of delay was due to the congestion in Trafalgar-square.

Dr. Barnardo's Homes

At the annual general business meeting of Dr. Barnado's Homes National Incorporated Association held on May 15th, it was stated that 116,649 destitute boys and girls had entered the homes to Dec. 31st last. A total of 16,925 children and young people were dealt with during the year, and 1607 boys and girls and babies were admitted to the homes—1466 permanently and 147 temporarily. The number in residence at the end of the year was 8345. These homes, it is claimed, have no red tape and no waiting-list: the need of the child is the only consideration. The address of the Association is, 18, Stepney Causeway, London, E. 1.

Noise Abatement

The Prime Minister will open, on May 31st, at the Science Museum, South Kensington, a Noise Abatement Exhibition which is being arranged through the Anti-Noise League. The exhibition will remain open throughout the month of June from 10 A.M. to 6 P.M. daily, and will conclude with a conference. This begins with a reception at 3 P.M. on June 26th, when Lord Horder, chairman of the League, with Lady Horder, will receive the guests. At 4.15 Mr. Hore-Belisha, Minister of Transport, will take the chair for a discussion on sound and noise to be opened by Mr. G. W. C. Kaye, D.Sc. Meetings will be held at 11.30 A.M. and 3 P.M. on the two subsequent days, when the chairmen will be Mr. Geoffrey Shakespeare, M.P., Mr. W. Ormsby-Gore, M.P., Lord Halifax and Mr. H. G. Wells, and the speakers Mr. H. G. Strauss, Mr. Hope Bagenal, Sir Henry Richards, and Lord Horder. During the exhibition a special display of noise-resisting materials will be shown at the Building Centre, 158, New Bond-street, W. The exhibition itself will present a comprehensive survey of the problem of noise, and will contain among other things a demonstration house incorporating the latest architectural and building designs and materials for sound-proofing and sound absorption. Further information may be had from the general secretary, Anti-Noise League, 66, Victoria-street, S.W. 1.

University of London

At a meeting of the senate held on May 15th Dr. A. St. G. Huggett was appointed to the chair of physiology at St. Mary's Hospital medical school, and Mr. J. Paterson Ross to the chair of surgery at St. Bartholomew's Hospital medical college, both from Oct. 1st.

Dr. Huggett, who was born in 1897, was educated at Wimbledon College, the City of London School, and St. Thomas's Hospital medical school, where he won the senior entrance science scholarship. Qualifying in 1918 he saw active service in North Russia with the Royal Army Medical Corps, and returned in the following year to the physiological department at St. Thomas's. Here his employment was at first part-time, and from 1922 to 1925 he held a Beit research fellowship. From 1925 to 1930 he was whole-time demonstrator, and by the latter year had graduated as M.B., Ph.D., and D.Sc. of London University. Appointment to a lectureship at Leeds followed, and since 1931 he has been university reader in pharmacology there, while remaining a member of the physiology staff. He has examined for the universities of Leeds and Manchester, and for the Royal College of Surgeons. Of his original work, observations on secretin and other subjects were published in collaboration with Prof. J. Mellanby. For some years he has been particularly concerned with problems of fœtal respiration.

Mr. Ross, who is 40 years old, qualified M.R.C.S. Eng. from St. Bartholomew's Hospital in 1917 after a distinguished career as a student. He joined the medical branch of the Royal Navy immediately, and after demobilisation returned to posts as demonstrator in physiology and pathology, and house surgeon at St. Bartholomew's. In 1920 he won the university medal in the M.B. Lond., took the F.R.C.S. Eng. in 1922 and the M.S. Lond. in 1928. In 1931 he was awarded the Jacksonian prize of the Royal College of Surgeons, and became a Hunterian professor of the College, and in the same year was appointed assistant surgeon to St. Bartholomew's Hospital, assistant director of the surgical unit, and reader in surgery in the University of London, as well as assistant surgeon to the West End Hospital for Nervous Diseases. He spent some months as associate in surgery at the neurological clinic of the Peter Bent Brigham Hospital in Boston, U.S.A., working with Prof. Harvey Cushing. His contributions to surgical literature have been chiefly concerned with neurological surgery, and in 1934 he published jointly with Prof. G. E. Gask a book entitled "Surgery of the Sympathetic Nervous System."

The Dunn exhibition in physiology for 1935 was awarded to Mr. R. D. Blachford (Guy's Hospital medical school), and the Dunn exhibition in anatomy was divided between Mr. A. G. Apley and Mr. P. H. Wood (University College).

Sir Ernest Graham-Little was reappointed, and Prof. M. Greenwood, F.R.S., appointed, to the senate for the period 1935–39.

On May 27th, 29th, and 31st at University College Dr. William McDougall, F.R.S., professor of psychology in Duke University, New Columbia, will lecture on psycho-analysis and social psychology. The lectures will be at 5.30 P.M., and Prof. Charles Spearman, F.R.S., will take the chair at the first.

University of Leeds

On July 1st the hon. degree of LL.D. will be conferred on Dr. Walter Elliot, Minister of Agriculture, and the hon. degree of D.Sc. on Dr. Harvey Cushing, professor of neurology in Yale University, U.S.A.

Glasgow Post-Graduate Medical Association

This association has arranged for a general medical and surgical course to be held from August 19th to Sept. 13th. The mornings will be occupied with general medicine and surgical diagnosis and minor surgery at the Victoria Infirmary and in the Western Infirmary, while the afternoons will be spent in studying special subjects. Clinical assistantships are also available in some of the institutions taking part in the work of the association. Further information may be had from the secretary of the association at the University, Glasgow.

Middlesex Hospital Medical School Centenary

The 100th anniversary of the foundation of the Middlesex Hospital medical school is to be celebrated on Wednesday, July 24th. In the afternoon the prizes and Medals won during the session 1934–35 will be presented to students by the Chancellor of the University of London, and on the same day there will be a "scientific evening." Both ceremonies will be held at the Middlesex Hospital. The students' centenary ball is to be held at the Dorchester Hotel on July 25th.

The "refresher course" and annual dinner will be held as usual during the last few days of September, and early in October respectively.

Calls to the Bar

On May 15th Dr. Fred Grundy (Inner Temple) and Dr. J. L. Moir (Middle Temple) were called to the Bar.

A Netherlands Information Bureau

To promote relations between the British Empire and the Netherlands and her colonies, a Netherlands and Netherlands Indies Information Bureau has been established in London. Its address is Shell-Mex House, Strand, W.C.2.

National Temperance Hospital

The tenth annual Macalister lecture will be delivered at this hospital (Hampstead-road, London, N.W.) on Thursday, June 20th, at 9 P.M., when Mr. Herbert Paterson will speak on medicine and magic. Medical practitioners are invited to attend and bring friends.

Memorial to Sir Donald MacAlister

On May 5th a stained-glass window in the war memorial chapel of the University of Glasgow was dedicated to the memory of Sir Donald MacAlister, principal of the university from 1907 to 1929 and chancellor from 1929 to 1934. The window has been placed in the chapel by the university court.

British Science Guild

At the annual general meeting of this guild to be held on June 12th, at 4.30 P.M., a lecture on Gas Defence will be given by Mr. J. Davidson Pratt, F.I.C., secretary of the Association of British Chemical Manufacturers. The meeting will take place in the lecture theatre of the Royal Society of Arts, John-street, Adelphi, London, W.C. The address of the guild is 6, John-street.

West London Medico-Chirurgical Society

Prof. Edward Mellanby, F.R.S., secretary of the Medical Research Council, will deliver the Cavendish lecture of this society on Thursday, June 13th, at 8.30 P.M., at the Kensington Town Hall. He will speak on proper feeding as the first essential for good physique and health. There will be a reception at 8 P.M., and the annual conversazione and medical and surgical exhibition will follow the lecture.

Manchester Medical Society

The annual general meeting of this society was held on May 1st. In taking the chair, the new president, Dr. Arnold Gregory, spoke of the services of Dr. E. Bosdin Leech, the retiring president, and referred to the successful conclusion of the society's centenary year under his presidency. After Dr. T. H. Oliver had given a short appreciation of the untiring work of Dr. Leech on behalf of the society, a presentation was made to Dr. and Mrs. Leech. Dr. Spence read a paper on England during the Black Death.

Industrial Accidents and Diseases

A British committee has been formed in connexion with the seventh International Congress on Industrial Accidents and Diseases, to be held in Brussels from July 22nd to 27th. The members include Sir Thomas Oliver, M.D. (chairman); Dr. D. A. Coles; Dr. Gilbert Burnet; Prof. E. L. Collis, M.D.; Colonel Donald J. Mackintosh, M.B.; Prof. S. L. Cummins, M.D.; Prof. John Glaister, M.D.; Colonel P. S. Lelean, F.R.C.S.; Dr. C. S. Thomson; Dr. S. A. Henry; Dr. T. E. A. Stowell; Dr. S. W. Fisher; Dr. Philip Ellman; Dr. Ronald E. Lane; Dr. Howard E. Collier; Lieut.-General Sir Harold Fawcus, M.B.; Dr. J. D. Byrd; Dr. W. Seaman Bainbridge; and Dr. Henry G. Kessler.

Post-graduate Courses in Berlin

International medical post-graduate courses are to be held in Berlin on the following subjects: internal medicine (Sept. 2nd–14th); intrathoracic surgery (Sept. 2nd–6th); tuberculosis (Sept. 9th–14th); infectious diseases (Sept. 16th–21st); throat, nose, and ear (Sept. 30th–Oct. 12th); and eugenics (Oct. 7th–12th). Monthly courses in all the special departments of medical science, including practical work, will also be held. Particulars may be had from the information bureau of the Kaiserin Friedrich-Haus, Robert Koch-Platz 7, Berlin, N.W. 7.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, May 27th.

Odontology. 8 P.M. (Royal College of Surgeons, Lincoln's Inn-fields, W.C.), Annual General Meeting. Sir Frank Colyer will show new specimens received in the Museum.

Tuesday.

Medicine. 5 P.M., Annual General Meeting. Dr. C. C. Ungley: Parenteral Liver Therapy in Pernicious Anæmia and Subacute Combined Degeneration. Dr. G. G. Kayne: Use of Sanocrysin in Pulmonary Tuberculosis. Dr. Burgess Barnett: Hæmostatic Uses of Snake Venom.

Wednesday.

Surgery. Provincial Meeting in Cardiff.

History of Medicine. 5 P.M., Dr. J. D. Comrie: Eighteenth Century English Medicine.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Thornhaugh-street, W.C.

Fever Hospital Medical Services Group.

Friday, May 31st.—4.30 P.M., Dr. Murdoch McGregor, Dr. H. S. Banks, and Mr. T. B. Layton: Incidence and Management of Scarlet Fever Otitis.

BRITISH PSYCHOLOGICAL SOCIETY.

Medical Section.

Wednesday, May 29th.—8.30 P.M. (11, Chandos-street, W.), Mr. P. E. Vernon: The Rorschach Inkblot Test in the Light of Recent Research.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, May 27th, to Saturday, June 1st.—Maudsley Hospital, Denmark-hill, S.E. Afternoon course in psychological medicine.—St. John's Hospital, [illegible] W.C. Afternoon course in derma- [illegible] all.)—Chelsea Hospital for [illegible] S.W. Course in Gynæcology.—*City of London Hospital*, Victoria Park, E. *All-day* course in Chest diseases.—London Lock Hospital, Dean-street, W. Afternoon course in venereal diseases. *Courses arranged by the Fellowship are open only to members and associates.*

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

Monday, May 27th.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Surgical and Gynæcological Wards, Eye and Gynæcological Clinics. 4.15 P.M., Mr. Green-Armytage: Seven Obstetric Pillars.

Tuesday.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic. 4.15 P.M. Dr. Redvers Ironside: Diseases of the Sympathetic Nervous System.

Wednesday.—10 A.M., Medical and Children's Wards, Children's Clinic. 2 P.M., Eye Clinic, Gynæcological Operations.

Thursday.—10 A.M. [illegible] Gynæcological Clinics. Noon, [illegible] y and Eye Clinics [illegible]

Friday.—10 A.M., S[illegible] t., 2 P.M., Throat [illegible]: Lecture.

Saturday, June 1st.—10 A.M., Surgical and Children's Clinics, Medical Wards.

Daily at 2 P.M., Operations, Medical and Surgical Clinics. *The lectures at 4.15 P.M. are open to all medical practitioners without fee.*

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, S.W.

Wednesday, May 29th.—4 P.M., Dr. W. J. O'Donovan: Skin Diseases and the Workmen's Compensation Act.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday, May 30th.—2 P.M., Dr. W. J. Pearson: Pulmonary Tuberculosis. 3 P.M., Dr. W. W. Payne: Carbohydrate Metabolism: 2. Action of Insulin.

Out-patient Clinics daily at 10 A.M. and Ward Visits (except Wednesday) at 2 P.M.

UNIVERSITY OF LONDON.

Monday, May 27th, Wednesday and Friday.—*5.30 P.M.* (University College), Prof. William McDougall, F.R.S.: Psychoanalysis and Social Psychology.

Tuesday, Thursday, and Friday.—5.30 P.M. (King's College, Strand, W.C.), Dr. Daniel De Lange: The Head Problem in Chordates.

NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY.

Monday, May 27th.—5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel-street, W.C.), Miss May Smith, D.Sc.: Temperamental Factor in Industry. (Last of three lectures.)

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.

Wednesday, May 29th.—3 P.M., Dr. H. Crichton-Miller: Toxic Neurasthenia. 4.30 P.M., Dr. Cedric Shaw: Gastro-intestinal Syndromes.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.

Monday, May 27th.—5 P.M., Dr. M. Sydney Thomson: Common Skin Diseases in Childhood.

Tuesday.—5 P.M., Dr. H. W. Barber: Alopecia Areata, and Vitiligo.

Wednesday.—5 P.M., Dr. J. A. Drake: Animal Parasites.

Thursday.—5 P.M., Dr. A. M. H. Gray: Sclerodermia and Allied Conditions.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.2.

Thursday, May 30th.—5 P.M., Dr. Ronald Canti: Cultivation of Living Tissue.

ROYAL INFIRMARY, Manchester.

Tuesday, May 28th.—4.15 P.M., Dr. J. F. Wilkinson: Anæmia.

Friday.—4.15 P.M., Dr. T. H. Oliver: Demonstration of Medical Cases.

UNIVERSITY OF BIRMINGHAM[illegible]

Tuesday, Ma[illegible] ral Hospital), Mr. F. A. R. [illegible] of Surgical Cases.

Friday, May [illegible] Hospital), Dr. O. Brenner: [illegible] Heart Disease.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

Sunday, May 26th.—10.30 A.M. (Newcastle General Hospital), Prof. T. Beattie: Medical Ward Visit.

ROYAL INFIRMARY, Dundee.

Thursday, May 30th.—3.15 P.M., Mr. F. R. Brown: Surgery of the Sympathetic Nervous System. 4.15 P.M., Prof. Charteris: Recent Advances in Therapy which are likely to prove important.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

Wednesday, June 29th.—4.15 P.M. (Eye Infirmary), Dr. A. J. Ballantyne and Dr. S. Spence Meighan: Eye Cases.

Appointments

Burnham, Cecil, M.B., F.R.C.S. Edin., has been appointed Hon. Surgeon to the London Homœopathic Hospital.

Don, C. S. D., M.D. Aberd., M.R.C.P. Lond., Hon. Assistant Physician to [illegible] nary.

Ellison, J. E., M[illegible] Resident Surgical Officer at the [illegible]

Ironside, R. N., [illegible], Hon. Assistant Physician to [illegible] and Paralysis, Maida Vale.

***Russell, A. S. Dill**, M.B. Lond., Second Anæsthetist, London* Lock Hospital.

Smyth, Michael, M.Ch. Irel., F.R.C.S. Eng., Hon. Assistant Surgeon to the London Homœopathic Hospital.

Townsley, N. J., M.B. Belf., Resident Surgical Officer at the Royal Manchester Children's Hospital.

Births, Marriages, and Deaths

BIRTHS

Crouch.—On May 15th, at Welbeck-street, *the wife of H. A.* Crouch, O.B.E., M.C., M.R.C.S. Eng., Sudan Medical Service, of a son.

Durno.—On May 15th, at Herne Hill, S.E., the wife of J. Fyvie Durno, M.B. Aberd., of a daughter.

Evans.—On May 12th, at Devonshire-place, the wife of E. Stanley Evans, F.R.C.S. Eng., of Ascot, Berks, of a son.

Flood.—On May 16th, at Limpsfield, Surrey, the wife of Phillip Flood, M.R.C.S. Eng., of a daughter.

Graham Bryce.—On May 13th, at Didsbury, Manchester, the wife of Alexander Graham Bryce, F.R.C.S. Eng., of a son.

Grose.—*On May 20th*, at Suffolk House, Stanmore, to Winifred (*née* Oliver), wife [illegible] vare, of a son.

Maclean.—On May [illegible] the wife of Donald Maclean, [illegible] of a son.

Welch.—On May 12t[illegible] near Bedford, the wife of Cuth[illegible] Lond., of a daughter.

MARRIAGES

Bromley—Aveling.—On *May 18th*, at *All Saints'* Church, Wetheringsett, Suffolk, James Wilfred Bromley, M.B. Camb., to Elizabeth, only daughter of Dr. L. B. Aveling, of Brockford, near Stowmarket.

DEATHS

Brittain.—On May 18th, Percy Morgan Brittain, L.M.S.S.A., of Hatfield, Herts.

Ewens.—On May 13th, at Eastbourne, Henry Luther Ewens, M.D. Durh., aged 68 years.

Harper.—On May 18th, Peter Harper, M.D. Aberd., of Ferme Park-road, Hornsey, N.

Scott.—On April 1st, at Melbourne, Bernard Charles Scott, M.R.C.S. Eng., eldest son of the late Rev. T. S. Scott, Vicar of Anerley, aged 74.

Wilson.—On May 19th, suddenly, at Romford-road, Manor Park, Essex, William Alexander Wilson, M.B., Ch.B. Glasg., aged 52.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE INFLUENCE OF FOOD ON CHILD-BEARING *

By V. B. Green-Armytage, M.D. Brist.,
F.R.C.P. Lond., F.C.O.G.
GYNÆCOLOGICAL SURGEON TO THE WEST LONDON HOSPITAL, AND OBSTETRIC SURGEON, JEWISH MATERNITY HOSPITAL

More and more during recent years has it become manifest that the empirical knowledge and deductions of our forefathers were founded on sound scientific principles. For instance, take the recent work of biochemists, and particularly of Macomber, upon the physico-chemistry of sterility and abortion. It has been shown that vitamins E, A, and D are essential, and exist in every well-balanced diet because Nature is primarily concerned in the art of creation. It is therefore not without interest to read in the Books of Kings and Samuel no mean table of foodstuffs to remove what in the Bible is called "this reproach among men"; the diet recommended consisting of "wheat, barley, and meal, parched corn, beans, lentils, olives, honey, butter, sheep, and cheese of kine, with fatted fowl and fatted oxen and all the fruits of the field."

Moreover, we find in the Old Testament the first classical example of suggestion, coincidence, or enviable practice in the treatment of sterility, for we read "and Reuben, going out at the time of the wheat harvest found mandrakes which he brought to his mother Leah, and Jacob slept with Leah that night and she conceived, and later also Rachael conceived." The mandrake contains vitamin E and is our *Mandragora autumnalis*, which belongs to the solanaceæ and is an antispasmodic.

To some, such inference may appear fantastic; but I can assure them that many a time, both here and in the East, I have found that if you can correct the diet, either directly in the home or by change of scene, and will, at the same time, speed up metabolic "revs" (to use a mechanical term) by giving small doses of thyroid gland and iodine solution to both husband and wife for three months at least, your patient will become pregnant and remain so without abortion.

The exact mechanism we know not. My own view is that the thyroid speeds up every gland of internal secretion, and particularly the endometrium and chorion, which is thereby enabled to filter, or neutralise the effect of toxins or secretions which disturb carbohydrate metabolism, causing hypoglycæmia with decrease of the alkalinity of the blood and increase of blood pressure, damage to the renal glomeruli and hepatic lobules arising later with or without convulsions.

Time will show; but I think the pendulum of opinion is swinging towards the conclusion that the so-called toxæmia of pregnancy is primarily a pluriglandular endocrinal upset, and that most of the symptoms are due to toxins from the bowel which primarily injure the hypophysis. Hitherto the placenta has borne the brunt of blame.

Calcium

Much has been written in recent years of the calcium phosphorus content, and rightly so, for every fœtus is a parasite battening upon its mother for the formation of bone and teeth, &c. Indeed, dental calcification begins as early as the seventeenth week, but Nature prepares for this by commencing the formation of the fœtal thyroid and parathyroids about the twelfth week, their duty being the maintenance and control of calcium metabolism.

Abroad I have seen countless times during pregnancy, patients on the lowest rungs of the calcium-phosphorus ladder, representing osteomalacia, tetany, and fœtal rickets, whereas in England one encounters cases on the middle or higher rungs which, because not thought of, are not so easy to diagnose. Minor degrees of pregnancy acalcæmia are ever with us in this great city. In some, the main stress is in youth, the back and pelvic girdle showing it in the form of scoliosis, lordosis, and descent of the promontory. If such women marry, delivery may demand surgical assistance or necessitate mutilative operations. In others, without any symptoms whatever, owing to softness of the bones and the weight of the body, at the second dentition or puberty, the pelvis may assume the android or funnel type, with lessening of the sub-pubic angle and great contraction of the outlet.

Let me recall the case of a patient who went from Bradford to marry in India. To all appearances she was a strong, strapping, Yorkshire girl. She went into labour. Her doctor was quite comfortable as regards her usual measurements and the relation of the fœtal head to the inlet; but he forgot—or perhaps it would be better to say he had not been taught—to pay attention to the outlet measurement. After the head had been on the perineum for some hours, he tried to apply forceps and could not. He then did a craniotomy. She developed puerperal septicæmia and was sent to my isolation block, where she died. Had she been measured, or had it been realised that a diet deficient in youth can produce symptomless bony deformity at the outlet only, this disaster could have been avoided by Cæsarean section.

Take another condition as common in private as in hospital practice—the flabby uterine wall associated, with a flabby abdominal wall and flabby cardiac wall. Here we have a condition producing a syndrome of peculiar risk—namely, malpresentation, uterine inertia, retained placenta, post-partum hæmorrhage, and obstetric shock. (I do not include inversion, because it is so rare.)

Any or all of these may be found in the anæmic, acalcæmic woman who has been watched through pregnancy with an unseeing eye; for "without vision the people perish."

Endocrine Factors

It is one of the paradoxes of Nature that it is the multipara who suffers most. They are not often like the well-fed Hebrew women, in the book of Exodus—"brisk creatures delivered before ever a midwife reaches them" (Moffatt)—but are like the wife of Phinehas in the book of Samuel, who big with child bowed herself and fell in labour; and when she was on the point of death they that stood about her said, "Fear not for thou hast born a son. But she answered not, neither did she regard it." These are signs and symptoms of clinical importance which compel attention and drive home the maxim that the "vitamins are to the endocrines what the endocrines are to the economy"; for by correct feeding, sunshine, and exercise, disaster may be obviated.

Modern biochemistry and the pathology of the living indicate that many of the tragedies of pregnancy are due to deficiency or excess of the endocrine glands associated with dietetic errors. For a long while we have known that the thyroid gland hypertrophies, and now we know that the adrenals and pituitary do likewise, obviously for the maintenance of equilibrium. If, however, normal metabolic function should be disturbed, glandular dystrophy will manifest itself. For instance, excess of posterior pituitary secretion, associated with imbalance of the thyroid and parathyroids, causes hæmorrhages, hyperexcitability, high blood pressure and flabby uterine wall, flabby heart wall, and hyperglycæmia.

The whole subject is one of intense interest, and it is the close relation of the endocrine system to the food intake that makes antenatal care so important, because only by keeping this view constantly in mind are we able to detect any deviation from the normal as regards blood pressure, urine, reflexes, and blood changes. The trend of modern opinion being that such substances as guanidine, histamine, and/or histidine (the breakdown products of vitiated function) are absorbed and give rise to their effects via the endocrine system. It is probable that this view is not far-fetched, for anyone who has ever seen a case of colubrine snake poisoning will agree that the effects of such injected poison are similar to those of the toxæmia of pregnancy. Such effects as hypoglycæmia, the increase of blood ketones and amines, the rise in blood pressure, the cyanosis, the œdema, the renohepatic damage and, finally, the convulsions, could not occur so rapidly unless the poison acted through or upon the pituitary gland.

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* A post-graduate opening address delivered at the West London Hospital on March 11th.

I am perfectly aware that there is a tendency to overdo antenatal care, but while modern urban life is so far removed from Nature and while coroners and newspapers and, what Shakespeare called "long-tongued, babbling gossips," exist, it is better to be careful rather than careless. Moreover, for those who deride, it is interesting to remember that so long ago as Genesis, the hyperexcitability of acalcæmia and hypothyroidism in the primipara was observed; for it is written that "Isaac besought the Lord for his wife because she was barren and He heard him. And after a time the children struggled in her womb and she was afraid and said, 'If it were to be so with me what need is there to conceive.'" Even in those days, therefore, tumultuous movements of the fœtus, usually associated with hypoglycæmia and lack of calcium, were known to anticipate miscarriage or premature delivery. Just as to-day we recognise that deficiency of vitamin D and C in the diet, and consequent deficiency of calcium and phosphorus during pregnancy, spell gingivitis, dental caries, muscular weakness, spasmodic cramps in the legs or arms, tachycardia, and tetany. Moreover, time will probably show that diet and pluriglandular dystrophy are associated with, or responsible for, diminution of the folliculin-producing principle in the ovary and placenta, which controls spontaneous contraction and the termination of gestation, and thereby lead in some cases to prematurity or pathological post-maturity.

Anæmia

So far, I have endeavoured to present a reasonable explanation for some of the major disabilities of pregnancy and parturition and have tried to show how many of the tragedies of childbearing are bound up with the abuse of natural food, and urban methods of living—Providence hurling the thunderbolt when endocrine function reaches its limit.

It now remains for us to deal with a lesser but no less important condition—that of the anæmias of pregnancy.

There are six different groups of anæmia of pregnancy, but I need not speak of those types which are associated with hæmolytic streptococci in the blood, or of that which is the sequence of postpartum hæmorrhage, or of that large group which is accompanied by disease of the spleen, lymph-glands, or marrow. But rather I want to remind you of those three common groups which are frequently met in practice.

The first is not very serious and is a condition of hydræmia which is associated with mild anæmia and œdema of the limbs and is due to the fact that the food supply is insufficient in those substances which equilibrilise the normal strain of pregnancy—substances which are found in all good diets—namely, calcium, iron, manganese, and copper. These cases are readily curable.

The second type is more insidious and is often met with in cases where there has been vomiting and much constipation in the early months and where the diet has long been poor, or is at the moment deficient, in those specific substances necessary for hæmopoiesis—namely, protein, fruits, and green vegetables. Moreover, it has been shown by Castle that these women have hypochlorhydria or achlorhydria accompanied with reduction or inactivity of the gastric enzyme. A blood picture shows hypochromia with marked reduction in hæmoglobin but a less marked diminution of red blood-cells. The red cells are small and vary in shape. Normoblasts may be present but megalocytes are not seen. There is a slight relative leucocytosis. If treatment is not actively instituted these changes rapidly progress and are accompanied by great prostration, dyspnœa, and œdema. Albuminuria is occasionally present and in the untreated patient miscarriage is by no means uncommon.

It used to be thought that this progressive anæmia was due to a placental toxin or bone-marrow disease, but now that we know that there is a reduction in the free HCl and total acidity of the gastric juice we realise that this type of anæmia is due to a diminution of hæmoglobin-building materials in the food together with a lessened ability to utilise such materials after ingestion. Moreover, when it is remembered that every fœtus in utero is a parasite, and in this particular type of case is born at term with a normal blood count and a liver fully stored with iron, copper, zinc, and so on, it will be understood that the demand of the fœtus for such hæmoglobin-building materials has been at the expense of its parent and is exactly comparable in its effect upon the hypochlorhydric mother, as visible and repeated blood losses would be. This being so, the outlook is good provided the clinical condition has been early recognised, for the treatment is mainly by sunlight, diet, and the provision of food containing those intrinsic and extrinsic factors in proteins, vegetables, and fruits, which stimulate hæmopoiesis. Liver in some form being also essential. Iron is given in the form of fresh Blaud's mass, grs. 90 per day, together with well-diluted hydrochloric acid.

The last type is the most grave from the patient's and practitioner's point of view and resembles Addison's pernicious anæmia. It is due to deficiency of Castle's extrinsic factor in the diet or lack of his intrinsic hæmatinic principle in the stomach and intestine. These patients have a waxy appearance and often there is a daily rise of fever and enlargement of the spleen which may simulate typhoid. The tongue is sore and in some patients retinal changes occur. Œdema and albuminuria are often present but rarely is there hypochlorhydria or achlorhydria. The blood picture shows a colour-index above 1 and much variation in the shape and size of the red blood-cells. Megalocytes are always present which means a pathological proliferation of megaloblasts in the bone marrow.

This type of anæmia is rare in England, but may be seen in patients who have come from the tropics to reside in London; for megalocytic anæmia is extremely common in the tropics and frequently accompanies sprue, dysentery, or parasitic infections of the bowel.

During pregnancy, or immediately after it, this type of anæmia may be fatal if it has not been recognised and treated adequately. Fortunately for us and the people of the tropics, the brilliant research work of Miss Lucy Wills has given us almost a specific method of treatment; for she has shown that whereas many of these cases react excellently to liver-ventriculin treatment on the intrinsic principle of Castle, others fail to do so because they lack that extrinsic factor (vitamin-B complex) in their diet which stimulates reticulocyte response. Such response can be assured and recovery made certain by giving Marmite ½ *to 1 oz.* per diem in addition to the usual dietetic measures, with or without repeated small blood transfusions. Marmite is an autolysed extract made from brewer's yeast and is probably a protein breakdown product.

The Useful Foods

So far I have spoken much of diet but have given no detail. Perhaps, therefore, I may be permitted to enumerate those food substances which particularly contain iron, copper, and manganese, together with the vitamins A, B, C, D, and E. They are: Asparagus, almonds, beef (lean), beans (kidney), barley, carrots, cheese, eggs (yolk), green vegetables (especially lettuce and spinach), liver, oatmeal, oysters, peas, peanuts, potatoes, prunes, raisins, walnuts, and wheat. Milk and fruit, such as apples, bananas, oranges, and grape-fruit, contrary to the general lay view, contain these metals in infinitesimal quantities. One pint of good raw milk contains 10 grains of calcium and nearly an ounce each of fat and protein, and 7 ounces of fresh protein contains 3 grains of calcium only. But every fœtus after the fifth month needs that quantity of calcium per day. So the mother must eat for two in order to maintain her calcium balance and mineral needs.

Here I should like to refer to the importance of Prof. E. Mellanby's work in the prevention of puerperal sepsis. As you know, by experiment in the septic isolation block at Sheffield, he was able to demonstrate that the concentrated exhibition of vitamin A preparations was capable of diminishing the mortality in septicæmia. This observation has not been fully corroborated, but there seems little doubt that if the antenatal patient is fed properly with foodstuffs or preparations containing vitamin A, she is less likely to develop septic complications after labour, the probability being that vitamin A is provided in food by Nature, to raise the resistance or surface tension of the epithelium to invasion by organisms. My own experience fully bears this out and I am sure that practitioners who often have to work under conditions far from ideal, would do well, not only to diet, but throughout pregnancy to prescribe one of the many vitamin A and D preparations on the market.

Finally, let me say something of the importance of diet in the postnatal period; for quite apart from its importance to the nursing mother and infant, we must remember that involution and repair has to occur in the muscles, bones, and joints, as well as in the uterus. Many of the postnatal aches and pains in the back and pelvic girdle are due to continued laxity of ligaments and cartilage which should not persist. Many of these symptoms are due to the fact that the fœtus is still draining the mother of calcium, phosphorus, &c., which she should make good in her diet; but it is more than probable that in many cases from poverty, lack of sunshine, and debility, the mother is incapable of doing this.

It is possible that many cases of one-child sterility are due to the mother remaining an invalid on a deficient diet after pregnancy; the defect in minerals reacting upon the hypophysis and ovary.

COMMITTEE AGAINST MALNUTRITION

At a public meeting held in London on May 16th, under the auspices of this committee, Prof. V. H. Mottram, who presided, remarked that people seem to think that malnutrition is a definite state, whereas he would suggest that any nutrition falling below the optimum is malnutrition. Mr. Joseph Needham, D.Sc., reader in biochemistry in the University of Cambridge, mentioned investigations which showed that, whereas a group of good-class public school-children gave 50 per cent. as in the highest category for health, a poor elementary school gave only 9·6 per cent., and an elementary school in an area with severe unemployment 6 per cent. A further inquiry had shown that a group of public school boys were on the average 20 lb. heavier than a group of boys of the same age in poor schools. Miss Eleanor Rathbone, M.P., contended that it was unfair to place upon the working housewife the responsibility for malnutrition: that her "ignorance" played but a small part was shown in recent surveys—e.g., on Merseyside. If the working housewife spent little on milk, vegetables, and fruit, it was because she could not afford it. In the maldistribution of wealth unfair taxation played a part; again, wages and salaries took no account of family responsibilities. There was now, said Miss Rathbone, an opportunity of making two needs fit into each other—the need of the ill-fed and the need of the agricultural industry. About three million school-children now received a third of a pint of milk cheap on school days. If more money were granted, this service could be extended to the other three million school-children (not only on school days but on holidays as well) and to the children under school age and their mothers. She believed also that there was a strong case for providing one free meal a day for all elementary school-children, and to all secondary school-children under a suitable means test. Dr. Janet Vaughan said that half the patients that came to her out-patients' clinic suffered from diseases which could have been prevented if they had had the right food. There was a campaign for curing "incurable" diseases like cancer; why not a campaign for curing the diseases for which the cure was known, the deficiency diseases? Dr. J. R. Marrack, university professor of chemical pathology at the London Hospital, spoke of diseases not directly but indirectly due to inadequate food. Children with rickets, for example, were more likely to die from pneumonia, whooping-cough, and bronchitis—the main causes of death among young children—while from anæmia one would find increased incidences of other diseases such as pneumonia and diarrhœa. The increase of tuberculosis in neutral countries during the late war could only, in his opinion, be accounted for by food deficiencies. Leprosy in some parts of India attacked 12 per cent. of the people; and there was now little doubt that leprosy was closely associated with food deficiency. Prof. Marrack mentioned that the tuberculosis death-rate among young women between 20 and 30 in Calcutta was nearly as high as the total death-rate in New Zealand from all causes.

NEW PREPARATIONS

Staphylococcus Toxoid A and B.—We have received from Messrs. Burroughs Wellcome and Co., Snow Hill-buildings, London, E.C., samples of two preparations to be used for active immunisation: "Wellcome" Brand Staphylococcus Toxoid A (1/10 dilution), and Staphylococcus Toxoid B (undiluted toxoid), each in containers of 1 c.cm. Immunisation with staphylococcus toxoid has been used recently as a combined method of prophylaxis against, and treatment of, chronic infections. Promising results have been reported from Melbourne and Toronto in such conditions as recurring boils, carbuncles, acne, sycosis, and blepharitis. English experience appears to be not yet large, but the results, obtained mainly during the course of an investigation by the Therapeutic Trials Committee of the Medical Research Council, agree with those reported from Australia and Canada. The investigation of the M.R.C. Committee was carried out with staphylococcus toxoid supplied by the Wellcome Physiological Research Laboratories. In a considerable number of patients "cure" has been obtained; in many "improvement"; and in a small number "no improvement." There are on record, it is frankly admitted, instances of puzzling relapses in patients who had shown rapid disappearance of long-standing symptoms—a phenomenon which further experience may explain and perhaps obviate.

Progestin (B.D.H.).—The corpus luteum secretes a hormone, progestin, the secretion being responsible for the control of many of the phenomena of pregnancy and menstruation. We have received from British Drug Houses Ltd. (Graham-street, City-road, London, N.) a sample of progestin distributed by the firm. Progestin (B.D.H.) is a preparation of the hormone standardised for its proliferational activity in the immature rabbit uterus previously treated with œstrin. The manufacturers have evidence that it should be of value especially in the functional disorders of pregnancy and menstruation. The drug is to be injected intramuscularly, for which purpose it is issued in ampoules, the contents of which may be found on examination to be turbid. This turbidity can be removed by warming, and in all events it is recommended to place the ampoule in warm water before transferring the contents to a syringe, which should have a strong needle, at least 2 in. in length and of sufficient diameter to allow free passage of the oily solution. A circular issued by the firm with the preparation claims that complete absence of menstruation or a scanty menstrual flow may be treated with advantage with a mixture of œstrin and the corpus luteum hormone.

FERRO-"HEPAMULT."—Messrs. H. R. Napp Ltd., 3 and 4, Clements-inn, London, W.C., send us a brochure in explanation of their new product Ferro-"Hepamult," together with a sample of the preparation. This consists of the active principles of liver, which last year the firm introduced to the medical profession under the name "Hepamult" (v. THE LANCET, 1934, ii., 342), together with an assimilable ferrous salt. It is standardised in the proportion of 10 g. "Hepamult" (equals 8 oz. fresh liver) to 1·7 g. iron, that quantity being the average daily dose. Ferro-"Hepamult" is intended for the treatment of anæmias, and should find favour with practitioners, as a combination of liver and iron treatment in anæmic conditions is very generally recognised as valuable. Ferro-"Hepamult" is presented in the form of palatable sugar-coated granules carefully tested and standardised, while the iron content is in the form of a stable ferrous salt ensuring ready absorption and absence of intestinal irritation.

BENGAL MEDICAL COLLEGE CENTENARY VOLUME.—This may be obtained from the secretary of the subcommittee, Dr. A. C. Ukil, Medical College, Calcutta.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Two Hon. Clin. Tutors.

Accrington, Victoria Hospital.—H.S. £150.

Albert Dock Hospital, Connaught-road, S.E.—Res. M.O. At rate of £110.

All Saints' Hospital, Austral-street, S.E.—Res. H.S. At rate of £100.

Bath, Royal United Hospital.—Hon. Surg. for Ear, Nose, and Throat Dept., and Hon. Med. Reg.

Beckenham, Bethlem Royal Hospital, Monks Orchard.—Radiologist. 150 guineas.

Bedford County Hospital.—First and Second H.S. At rate of £155 and

Belfast, Royal M.O. At rate of £26.

Physician. £650.

Each £125.

for Consumption, &c.—

Sanatorium.—Asst Res. M.O. £175.

Brentwood, Essex County Mental Hospital.—Jun. Asst. M.O. £510.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £120.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Canterbury, Kent and Canterbury Hospital.—Two H.S.'s. Each at rate of £125.

Carshalton, &c., District Hospital.—Two Hon. M.O.'s.

Charing Cross Hospital, W.C.—Asst. Physician.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.

Cheltenham General and Eye Hospitals.—H.P. £200.

Connaught Hospital, Walthamstow, E.—H.S. At rate of £100.

Coventry and Warwickshire Hospital.—H.S. for Aural and Ophth. Depts. At rate of £125.

Downpatrick, Down Mental Hospital.—Res. Med. Supt. £800. Also Asst. M.O. £350.

Dreadnought Hospital, Greenwich.—Hon. Gynæcologist. Also H.P. and H.S. Each at rate of £110.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Clin. Asst. to Ear, Nose, and Throat Dept. Also H.P., three H.S.'s, and Obstet. Asst. Each at rate of £50.

Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120.

Gateshead Mental Hospital.—Med. Supt. £800. Also Asst. M.O. £400.

Glasgow University.—St. Mungo Chair of Surgery.

Hartlepools Hospital.—H.S. At rate of £150.

Hastings, Royal East Sussex Hospital.—Jun. H.S. At rate of £150.

Hertford County Hospital.—Sen. H.S. At rate of £200.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. for Dept. of Pathology. £350. Also Asst. Physician.

Hospital for Tropical Diseases, Gordon-street, W.C.—Two H.P.'s. Each at rate of £120.

Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.

Hove, Lady Chichester Hospital.—Jun. H.P. At rate of £50.

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vich Hospital.—H.P. £120.

Each £100–£120 per mensem.

r Law Infirmary.—Res. M.O. £100–£200.

King George Hospital, Ilford.—Res. Surg. O. and Res. Asst. Surg. O. £300 and £250 respectively. Also Two H.P.'s and Three H.S.'s. Each at rate of £100.

Leicester Royal Infirmary.—H.S. At rate of £125.

Leicestershire and Rutland Mental Hospital, Narborough.—Asst. M.O. £350.

Liverpool, Stanley Hospital.—Hon. Asst. Surgeon.

London Hospital, E.—Physician. Also Surgeon.

Lucknow University.—Prof. of Medicine. Rs.900/- per mensem.

Macclesfield General Infirmary.—Second H.S. At rate of £150.

Maidstone, West Kent General Hospital.—H.S. £150.

Manchester Ear Hospital.—Res. H.S. £120.

Manchester Royal Infirmary.—Res. Clin. Pathologist. £100.

Metropolitan Water Board, Rosebery-avenue, E.C.—Chief M.O.

Middlesbrough, North Riding Infirmary.—Third H.S. At rate of £125.

Mid-Wales Counties Mental Hospital, Talgarth, Breconshire.—Asst. M.O. £400.

ria Infirmary, &c.—Temp. Asst.

0–£600.

Mental Hospital.—Clin. Asst. 30 guineas.

Norwich City.—Asst. M.O.H. and Asst. School M.O. £500.

Paddington Hospital, Harrow-road, W.—Res. Med. Supt. £1100.

Preston, Sharoe Green Hospital.—Sen. Asst. Res. M.O. At rate of £150.

Princess Elizabeth of York Hospital for Children, E.—H.P. and H.S. Each at rate of £125.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Registrar. 20 guineas.

Queen Mary's Hospital for the East End, E.—Res. M.O. and Two Cas. O.'s. Each £150. Also Two H.S.'s., H.P., Obstet. H.S., and Res. Anæsthetist. Each £120.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.

Romilly Lodge for Mentally Defectives, Hornsey Rise, N.—Part-time M.O. At rate of £40.

Ross Institute of Tropical Hygiene, Keppel-street, W.—M.O.'s.

Royal College of Physicians of London.—Leverhulme Research Scholarship. £500.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. At rate of £150. Also First H.S. and Res. Anæsthetist.

Royal Masonic Hospital, Ravenscourt Park, W.—Res. Surg. O. At rate of £250.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £200. Also H.S. At rate of £100.

Ryde, Royal Isle of Wight County Hospital.—Res. H.S. At rate of £180.

St. George's Hospital, S.W.—Asst. Physician.

Salvation Army, Mother's Hospital, Lower Clapton-road, N.—Jun. Res. M.O. At rate of £80.

Sheffield, Jessop Hospital for Women.—Three H.S.'s. Each at rate of £100.

Sheffield Royal Hospital.—Clin. Asst. to Ear, Nose, and Throat Dept. £300.

Sheffield Royal Infirmary and Royal Hospital.—Clin. Asst. £300.

Sheffield University.—Asst. Pathologist and Demonstrator. £500. Also Lecturer in Bacteriology. £600.

Southend-on-Sea General Hospital.—Med. Reg. £300. Surg. Reg. £250.

Stockport Infirmary.—Res. Surg. O. £250.

Surrey County Council.—Two Asst. M.O.'s. Each £600.

Warwick, King Edward VII. Memorial Sanatorium, Hertford-hill. Jun. Asst. M.O. At rate of £200.

Watford and District Peace Memorial Hospital.—H.S. At rate of £150.

West Bromwich and District General Hospital.—H.P. At rate of £200.

West London Hospital, Hammersmith-road, W.—Chief Clin. Asst. in X Ray Dept. £125. Cas. O. £250. Also H.P. and 2 H.S.'s. Each at rate of £100.

Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.

Worksop, Victoria Hospital.—Two Residents. At rate of £150 and £120 respectively.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Castle Hedingham, Essex.

Medical Referee under the Workmen's Compensation Act, 1925, for the Ashby-de-la-Zouch and Loughborough County Court Districts (Circuit No. 20). Applications should be addressed to the Private Secretary, Home Office, Whitehall, London, S.W.1, before June 12th.

CHISWICK GENERAL HOSPITAL.—The old house on Chiswick Mall, which the late Mr. Dan Mason gave to be used as Chiswick Hospital, is to be demolished and a new hospital is to be erected on the same site. No appeal will be made to the public for funds for rebuilding, and there will be accommodation for 14 men, 14 women, and 10 children.

ADDRESSES AND ORIGINAL ARTICLES

OBSERVATIONS ON THE ABDOMINAL AND CIRCULATORY PHENOMENA OF ALLERGY

BY JOHN A. RYLE, M.D., F.R.C.P. Lond.
PHYSICIAN TO GUY'S HOSPITAL

IN recent times attempts have been made to spread the net of allergy too widely. Conditions having no clinical or ætiological relationships with the accepted allergic disorders have been discussed as possible or probable examples of these disorders. It is a primary duty of clinical study to define disease, to render descriptions more precise, and to establish diagnostic criteria. At present we include among the allergic disorders asthma, hay-fever, spasmodic rhinorrhœa, intermittent hydrarthrosis, urticaria, angioneurotic œdema, and eczema. With regard to migraine and epilepsy, although they appear not infrequently in persons and families subject to allergy and the former may be associated with food idiosyncrasies, opinion is less secure. A paroxysmal neurosis, although it consorts with "nervous" constitutions and develops in response to minimal stimuli, need not necessarily depend upon that type of idiosyncrasy which allergy implies. Activation of symptoms by anxiety or an east wind would not at present be considered as evidence of allergy. Certain gastro-intestinal disorders and circulatory phenomena have also been classified as allergic, but they stand in need of more careful portraiture.

It is the purpose of this paper to identify and define certain abdominal syndromes and circulatory disturbances which may be reasonably regarded as expressions of the allergic state and, on a purely clinical basis, to suggest criteria without which we should be unwilling to accept them as genuinely allergic.

Allergy and Anaphylaxis

The word allergy has not found its way into the Shorter Oxford Dictionary. In Dorland's Medical Dictionary it is described as "a condition of altered susceptibility which causes an individual to react to a second inoculation of an antigen in a manner different from his reaction to the first inoculation (von Pirquet). The term is now used to denote the natural hypersensitiveness of an individual as contrasted with anaphylaxis, which is hypersensitiveness artificially induced by inoculation." The clinical relationships of anaphylaxis and allergy are, however, very close. Identical symptoms occur in the artificially induced and the spontaneously developed disorder. Main distinctions between the two conditions are that anaphylaxis depends upon a specific sensitisation and has a limited course, whereas in allergic states precise specificity is rare or other forms of sensitiveness become superimposed upon an original form, while nervous reproduction of symptoms is readily conditioned. Cases of pure horse-asthma, for instance, are exceptional and in most asthmatics there is a multiplicity of circumstances which may condition or predispose to the attack. Furthermore the clinical course of an allergic disorder is recurrent and unlimited.

It would also seem that anaphylactic symptoms, although more readily induced in persons subject to allergic disorders, can be produced in some degree independently of particular constitutional predisposition. Allergy, on the other hand, is expressive of an inborn or constitutional predisposition and for this reason can result from smaller and often infinitesimal or undiscoverable stimuli.

"EXPERIMENTAL DISEASE" IN HUMANS

While serum-sickness is common, opportunities of studying anaphylactic shock in man are fortunately rare. It may baffle observation by proving immediately fatal. Some years ago, in conjunction with J. Fawcett, I wrote a paper entitled "Cases of Delayed and Immediate Anaphylactic Shock with a note on the Circulatory Phenomena."[1] I reproduce our descriptions and discussion of two cases here, together with an account of one other case seen since, for the sole purpose of portraying the "experimental disease" (which includes both serum-sickness and serum-shock), and considering thereafter how far it is possible to discover parallel phenomena in a group of "spontaneous" cases which I have since, after careful consideration, classified in my files under the heading of allergy.

CASE 1. *Delayed Anaphylactic Shock.*—A young woman, aged 23, was admitted into Guy's Hospital under the care of Mr. F. J. Steward on Nov. 5th, 1922, with a "septic" finger. Operations were performed on the 6th, 8th, 10th, and 12th, for spread of infection, amputation of the finger finally becoming necessary. On Nov. 10th 50 c.cm. of antistreptococcal serum were given subcutaneously at the time of operation. Four days later patches of urticaria began to appear, and there was slight evening pyrexia. The local condition after the 12th progressed satisfactorily. At 4.30 A.M. on the 18th, eight days after the serum was given, the patient was wakened by breathlessness. She was seen at 5 A.M. by one of us (J. A. R.) and was then sitting up in bed with "asthmatic" breathing. The respiration-rate was 30 per minute, expiration was prolonged and wheezing, and she was expectorating small quantities of clear mucoid sputum. Sibilant expiratory rhonchi were audible all over the chest. She was pale, and the pulse-rate was between 110 and 120 per minute. Urticaria was appearing in large patches all over the trunk and limbs; the lips, ears, and eyelids were swollen. The house surgeon, Mr. J. K. Milward, had given her an injection of liquor adrenaline 1/1000 ♏ 2. Within 20 minutes the asthmatic attack was over, but she felt cold and shivery, the pulse remained quick, and urticaria continued to appear. She was packed round with hot blankets and bottles, and given hot tea and lactose. She was seen again at 8 A.M. By this time there were no asthmatic symptoms, but urticaria was still troublesome; she had vomited twice, had two actions of the bowels, and was completely pulseless. She complained of feeling "washed out," but apart from the cutaneous irritation and swelling of the gums, made no other specific complaint; she was mentally alert, and quite rational and calm, although she had before been considerably perturbed by the respiratory distress. At 10 A.M. we saw her together; no pulsation could be detected at the wrist or ankle, or in the carotid or subclavian arteries. The heart was not then, or at any subsequent observation, perceptibly enlarged, and there were no murmurs. The impulse was readily felt, the rate was 120–140 per minute, and the sounds were of good quality. She was not cyanosed. She was warm and the temperature was rising. The capillary tide in the nail-bed was good. The question of further administration of adrenaline was discussed, but we were agreed that, with such a degree of tachycardia, and no such urgent indication as "asthma" now persisting, it would be wiser to avoid the possible overstress to the heart which a sudden rise in blood pressure might entail. In spite of her apparently alarming condition a good prognosis was given, partly on the general impression of the patient's demeanour, the rising temperature, and disappearance of the shiveriness of which she had at first complained, and partly on the experience of the other case referred to below. For more than twelve hours no pulse could be felt at the wrist. After twenty-four hours the radial pulse still could not be detected with certainty. Vomiting ceased, but the patient had some nausea and felt that she could not take fluids, except in the smallest quantities, for fear that she would be sick. She was pale and thirsty, had a moist clean tongue, and continued to state that she felt "washed out" and intolerably tired, but that she found difficulty in getting to sleep.

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[1] THE LANCET, 1923, i., 325.

She was treated throughout with warmth, small quantities of fluid, brandy and lactose by the mouth, and six-hourly rectal administrations of 1 pint of 6 per cent. glucose. The foot of the bed was raised for a few hours, until she complained of the discomfort of the position. Sleep was secured at night with the aid of an opiate. Twenty-eight hours after the onset of the attack the radial pulse could be felt as a doubtful flicker, but not accurately counted. At the cardiac apex the rate could be readily determined as 120 to 130 per minute, but the sounds were not so clear as on the previous day. She now complained of acute pain in nearly all her joints. She could not open the mouth wide on account of pain in the temporo-mandibular joints, and the knees, ankles, wrists, and interphalangeal joints were similarly involved. There was no further trouble with urticaria. Aspirin was added to the rectal injections.

Almost abruptly at about 3 P.M. on the 19th or about 34 hours after the first appearance of urgent symptoms, the pulse became quite good in volume and slower in rate, and from then onwards it improved steadily. By midday on the 20th the pulse-rate was recorded as 80 per minute. After a further forty-eight hours all the joint pains had disappeared, but there was complaint of some deep-seated pain in the muscles of the left thigh. After this her progress was uninterrupted, except for the development of a small patch of erythema below the left knee, and later of an abscess in the right buttock. On the morning of the 18th, when the "shock" symptoms were at their height, the temperature reached 102°, but quickly fell again to normal. It rose during the period of the gluteal abscess, and became stable again after its drainage.

The remarkable feature of this case was the late development of severe shock-like symptoms, true anaphylactic shock being usually considered as an immediate rather than a remote phenomenon. Regarding serum-sickness as the usual anaphylactic response in human subjects, this case might alternatively be viewed as an extreme exaggeration of this response, for the symptoms of "serum-shock" and "serum-sickness" were coincident. Indeed, the case suggests the essential unity of the two conditions. The early development of urticaria, on the fourth day, was perhaps an indication of hypersensitiveness. The patient was not an asthmatic subject, and there was nothing else in her history to indicate that she was previously sensitive to foreign proteins. She had at the time no recollection of ever having had serum before, but it was later elicited from her mother that she had had diphtheria nineteen years previously, and that she was given antitoxin at the time. As there was no history of alarming symptoms on this occasion it would seem proper to regard her illness as a genuine instance of sensitisation by a previous dose. We thought it possible that immediate shock might have been averted by reason of the fact that she was under an anæsthetic at the time of administration of the serum. We were informed by Dr. P. P. Laidlaw that, although anæsthesia may relieve or avert bronchial spasm and so save life in the anaphylactic guinea-pig, it has little effect on similarly induced circulatory shock in dogs.

CASE 2. *Immediate Anaphylactic Shock.*—In October, 1918, a soldier was admitted to a main dressing station with a small wound of the buttock. He was pale, cold, and pulseless; he was vomiting and complaining of abdominal pains. So ill did he appear that special examinations were made to ascertain whether he might have an intra-abdominal lesion with hæmorrhage. The wound was carefully probed and found to be quite superficial. He was not aware of having sustained any other injury. Abdominal examination was negative. Within a short while urticaria appeared, and anaphylactic shock could be confidently diagnosed. The man had during his period of service received two previous prophylactic injections of A.T.S., after one of which he admitted to having "felt bad." He was examined probably within an hour or less of receiving the third dose of A.T.S., which had been given the same evening at an advanced dressing station. Mentally he was perfectly clear. He was treated as an ordinary case of surgical shock by warmth, elevation of the feet, and frequent small sips of fluid, but as after two or three hours the pulse was still impalpable he was sent down to a casualty clearing station with a special note. He there came under the observation of Major G. T. Mullally, who later reported that the man had remained pulseless for some hours, but was fit for evacuation to the base on the following day. Asthmatic symptoms were absent, and gastro-intestinal symptoms were the most prominent apart from those of circulatory failure.

The symptoms in both of the cases described suggested a profound fall in the systemic blood pressure of exceptionally long duration. Presumably the main volume of the blood must have accumulated in the splanchnic area. The absence of œdema and cyanosis, the rapid recovery and maintenance of superficial warmth, and the presence of a good capillary tide in the nail-bed would seem to exclude a capillary stagnation or heart failure. There was no unusual loss of fluid by sweating, diarrhœa, or diuresis, and the fluid intake was well maintained. The symptoms of circulatory shock persisted long after the disappearance of the bronchial, cutaneous, and gastro-intestinal reactions.

Neither before nor since have I seen any condition in which the state of pulselessness manifest in these two cases and persisting for so many hours was consistent with recovery.

CASE 3. *Delayed Anaphylactic Shock.*—A young married woman was operated on for acute appendicitis at 7 P.M. on Nov. 17th, 1932. At the conclusion of the operation she was given an injection of anti-gas-gangrene serum. On the morning of Nov. 23rd I was called urgently to see her with Dr. C. H. Atkinson. After a short period of malaise she had abruptly developed acute anaphylactic symptoms, including generalised urticaria, great œdema of the lips and eyelids, sensations of constriction in the throat, with attendant alarm, profound pallor, and pulselessness. An injection of liq. adrenaline 1/1000 ♏ 3 was given immediately and repeated later. In a few minutes there was a rapid improvement and visible subsidence of the facial œdema; the radial pulse, although quick and small, became palpable; the sensation of constriction departed. Vomiting, diarrhœa, and pyrexia followed with much malaise and some fever. In the evening there was still great irritation from the urticaria, but the case gave no further anxiety. It was later discovered that this patient had been given diphtheria antitoxin in childhood and that she had a bad rash. She has since shown herself liable to primula rashes.

It should again be noted that this patient received her second dose of serum while under an anæsthetic. A few years ago I had under my care a very anæmic patient, who had twice displayed violent and alarming immediate anaphylactic reactions following blood-transfusion, but whose response to a further transfusion, purposely given under anæsthesia, passed without anxiety.

On the experience of the three cases described the circulatory phenomena of anaphylaxis may be held to include pallor, tachycardia, initial coldness of the surface and extremities, and pulselessness due to a profound and sustained fall in blood pressure. In ordinary serum sickness a pulse-rate of 120 per minute is common. From the same cases we may also conclude that vomiting, purging, and diffuse pain are the outstanding abdominal symptoms of the anaphylactic state in man. Asthma, urticaria, "angio-neurotic" œdema, pyrexia, and multiple arthritis are among the other recorded symptoms.

DISTURBANCES ARISING WITHOUT APPARENT CAUSE

Let us now see how far these manifestations find a parallel (*a*) in acute and anxious disturbances arising spontaneously, or (more correctly) without apparent cause, and (*b*) in certain chronic or recurring disorders of less dramatic character.

CASE 4. *Abdominal Allergic Attacks; severe type.*—A married woman, aged 64, was brought to me by Mr. Hastings Gilford on Dec. 30th, 1931. Except for malaria many years previously her life had been healthy. *Her daughter suffered from asthma.* A year previously she had had an unexplained attack of malaise and sickness while abroad. In November, 1930, she had had a sudden severe attack of epigastric pain and cholecystitis was suspected. In January, 1931, she had an attack of quite a different kind, with violent generalised abdominal pain, vomiting, diarrhœa, and much shock. The vomitus was slightly streaked with blood. A succession of similar attacks followed at two to four weeks' interval. There were as many as four attacks within one period of a fortnight. An extreme degree of shock-like collapse was evident both to the patient and others around her. The acute phase was generally over within twelve hours. The X ray appearances of the gall-bladder were normal. She felt perfectly well between the attacks. A Chinese spiritualist, who affected to be able to see what was happening in the stomach, told her that she did not digest eggs! Most of the attacks had started at 2 A.M. *In one of the attacks her lips became tremendously swollen with angio-neurotic œdema.* In most of them her tongue was raw and red and her lips tended to peel afterwards. I could find no signs of organic disease.

CASE 5. *Abdominal Allergic Attacks; severe type.*—A medical man, aged 54, consulted me for the attacks to be described below. He had had malaria and pneumonia in childhood. *One brother had bad hay-fever.* Since childhood he had been liable to repeated abdominal attacks for which he had consulted many physicians. His longest free period had been nine months, his shortest ten days. The attacks generally started abruptly after premonitory lassitude. Fasting was a predisposing factor. In the attacks he had very severe generalised abdominal pain, starting under the rib margins, and of crescendo type. Nausea sometimes preceded, sometimes succeeded the onset of pain. Vomiting followed, and if it came early the attack passed more quickly. He was unable to eat or drink during the attacks, which would last from twenty-four to forty-eight hours. Throughout the attack he looked extremely pale and ill, and the pulse-rate rose to 120. He had a slight inguinal hernia, and during the attack "the sac seemed to fill with fluid," which he could press back into the abdomen. The abdomen was slightly swollen and it hurt him to take a deep breath. He had given up pork and bacon because one attack followed a pork pie, and mushrooms and fish because his skin had shown a slight reaction to these, but without benefit. In one attack a surgeon was called to see if he had appendicitis. Between the attacks he felt perfectly well. He had had *hay-fever* for thirty years, and for twelve years at intervals he had been subject to *angio-neurotic œdema* of his hand, arm, and perineum, and on five occasions of the palate and uvula, for which he had entered a nursing-home, fearing that tracheotomy might become necessary. Excepting for a right inguinal hernia and a myotonic right pupil, first noticed thirty years previously, there were no signs of any organic disease.

In both of these cases we find gastro-intestinal and circulatory phenomena closely comparable with those shown by the patients with anaphylaxis, and including shock, pallor, tachycardia, vomiting, diarrhœa, and abdominal pain. In addition we have, as confirmatory evidence, simultaneous or associated angio-neurotic œdema in both cases, hay-fever in one, and a solitary relative with an allergic disorder in both cases.

Before reviewing the less dramatic but more frequent allergic dyspepsias (in which circulatory manifestations are lacking or inconspicuous) there are further points in connexion with the vaso-motor phenomena of anaphylaxis and allergy which will bear consideration. Together with the objective pulse and blood-pressure disturbances of acute anaphylaxis from serum there may be associated the "sense of impending death" which, in conjunction with striking vaso-motor symptoms, is so pronounced a feature of vaso-vagal attacks (Gowers' syndrome). Vaso-vagal attacks chiefly affect patients who are, at the same time, physically unfit and in a state of anxiety. There is also, however, an occasional association between vaso-vagal attacks and migraine, asthma, epilepsy, spastic colon, and angio-neurotic œdema. All in fact proclaim an inborn hypersensitiveness which may be expressed in one or more of these several ways. It is rare in any of these to discover a specific sensitiveness as a basis for the vaso-vagal episodes, but an occasional case may develop symptoms in the first instance in response to a specific cause.

CASE 6. *Vaso-vagal Attacks following a Second Dose of Serum.*—A young man, aged 21 (a patient of Dr. A. W. Walters), whose feeding in infancy had caused much trouble and who had suffered from "mucous disease" until the age of seven, was thereafter fairly healthy until the age of eighteen. He then sustained a concussion and fractured a leg in a motor-cycle accident, and was given tetanus antitoxin. At the age of twenty-one he was involved in another motor-cycle accident, was again concussed, and fractured a small bone in his left hand, and was again given antitoxin. After this he was very unfit with urticaria and pyrexia, and developed attacks in which he was suddenly seized with a feeling of impending death and uncomfortable sensations about his heart. These attacks would last from half to one hour. When he sought to change his position things seemed to "black out" and he felt "wobbly" at the knees. He was terribly scared by these attacks, notwithstanding that he knew little of physical fear, was a keen rider to hounds, a member of the Auxiliary Air Force, and, as his history suggests, a none too cautious motor-cyclist.

The attacks continued for a time after the phase of serum-sickness. His father had experienced similar attacks at the age of twenty-seven but had outgrown them. I have no notes as to his appearance during these attacks but the subjective phenomena were those of Gowers' syndrome, of which the usual objective manifestations are pallor, coldness, and striking pulse and blood-pressure fluctuations. Had he experienced a solitary attack with urticaria immediately after the serum we should have accepted it as typical of anaphylaxis. It is reasonable to argue that the succession of attacks in this instance was initiated by a second dose of serum. The infantile and family histories suggest the conjunction with the therapeutic "experiment" of an appropriate "constitution."

ALLERGIC DYSPEPSIAS

It is not uncommon to meet persons who are aware of a food-idiosyncrasy. Shell-fish and eggs, especially duck's eggs, are well-known offenders and may give rise to gastric disturbance and erythematous or urticarial rashes. More rarely chocolate or coffee is blamed. Idiosyncrasies for drugs, not excluding those in common use like morphine (which may cause vomiting and collapse), are well recognised. The victims of these idiosyncrasies, however, although (like the horse-asthmatic) they exemplify a specific sensitiveness, usually have the sense to avoid what is poisonous to them and are rather less likely to consult us for recurring allergic disturbances than those whose sensitiveness lacks discoverable specificity. Of this latter group, I have selected a few examples from my files. The case histories illustrate some of the types of gastric and colonic disturbance which may be encountered and my reasons for regarding them as allergic.

CASE 7.—A medical man, aged 59, developed indigestion at a time of great strain. A suspicion of duodenal ulcer was entertained but not confirmed. At the same time he developed angio-neurotic œdema affecting the lips and eyelids particularly, and developing usually on waking in the morning. When he went on a holiday he lost both the dyspepsia and the angio-neurotic œdema. Later, with an access of work and worry, the symptoms recurred and the scrotum and penis also became affected by the œdema. At this time he did not lose the symptoms on a holiday. *His father had hay-fever. Two sisters and two brothers had asthma. One sister had chronic urticaria. His daughter was asthmatic.* His dyspeptic symptoms developed between two and three hours after food, and he sometimes had hunger-pain in the night. He was sleeping badly and was very tired when I saw him.

I found no signs of organic disease, and prescribed a third partner, medinal at bedtime, and an early retirement from practice.

He wrote to me eight months later as follows: "You will be interested to hear that since I have had better nights my digestive apparatus has been quite a different thing, and I have had no signs of the giant urticaria which troubled me last winter." Now, two years later, he has retired from practice and remains perfectly well.

Non-specific treatment, as with asthma, may sometimes play a useful part in "unconditioning" allergic symptoms.

CASE 8.—A young woman, aged 32, was brought to me by Dr. C. Boyson on account of a series of attacks of abdominal pain in the course of the descending colon, lasting perhaps twenty minutes. Six weeks and two years previously she had had bad attacks of pain in which she was "doubled up." For over ten years she had been worried by indefinite abdominal pains, and both the gall-bladder and the appendix had come under suspicion. At times she had feelings of extreme emptiness. She was of nervous type. She believed that influenza could precipitate an abdominal attack, and that worries and smoking aggravated. The gall-bladder was radiologically normal. There was indefinite tenderness in the right iliac fossa. In childhood and later she had been troubled with *eczema*, and throughout adult life by *hay-fever* and a spasmodic rhinorrhœa which was induced by proximity to horses. One brother was *asthmatic* and her father was a "*sneezer*." Later she was seen in an attack of cholecystitis with slight icterus and local tenderness over the gall-bladder.

CASE 9.—A retired mining engineer, aged 70 (referred by Dr. D. R. Pike), had suffered from heart-burn for many years with aggravation latterly. He was chiefly troubled between 3 and 6 A.M., when he was wakened by œsophatical burning and spasm, choking and hiccups, and would expectorate much watery fluid. A diagnosis of duodenal ulcer had been made by one physician, although there was no radiological confirmation. He was intolerant of salt meat and Vermouth, and knew his evening cigar "did him no good." His mother and maternal uncles had *asthma*. He himself showed a well-marked factitious *urticaria*.

CASE 10.—A married woman, aged 37, a patient of Dr. F. G. France, gave a long history of abdominal pain, had seen many physicians, and been fully investigated in a London hospital, without result or benefit. Seven years previously she had had a hysterectomy for menorrhagia and dysmenorrhœa. Her complaint was of a dull, aching, linear pain in the course of the descending colon, with aggravation by worry, exertion, and after defæcation, features characteristic of the "spastic colon." The stools were rather loose, and she had a feeling that the bowel was never empty. Apart from a myotonic left pupil there was no evidence of organic disease. She also suffered from *urticaria* and *hay-fever*, and her mother had suffered from *urticaria*.

CASE 11.—A married woman, aged 38, with three young children, was brought to see me by Dr. R. W. Todd, for recurring abdominal crises characterised by severe abdominal pain, profuse vomiting, even water being rejected, a temperature not exceeding 99°, and a quick pulse. There was general tenderness in the attacks with "semi-rigidity," but no distension. Appendicitis had been queried. In one attack the pain was chiefly epigastric; in another right-sided. Morphine had been given on one occasion. The attacks passed over in two or three days. After her last pregnancy a year previously the bowels had been slightly loose. One attack had followed shell-fish. She had also had slight attacks of *angio-neurotic œdema* affecting the lip and, following the last abdominal seizure, some "large raised bumps" on the back of the neck. She had always been liable to "acidity" and skin troubles. In her most recent attack there was headache. On several occasions she had experienced extremely severe attacks of *rectal spasm* lasting twenty minutes. Her first baby suffered from *universal eczema.* Apart from slight deep tenderness in the right iliac fossa there was no evidence of disease.

One of the chief difficulties in cases of this type is the differentiation from appendicitis. It is also to be remembered that appendicular infection or a gall-bladder infection may (as I have more than once been led to believe) act as the "sensitiser" in a patient with allergic tendencies. Diagnostic finality in cases of this kind may only be attained by a "follow up" over a period of years. The association of cutaneous or other allergic phenomena with abdominal attacks can never of itself exclude a more organic basis for such attacks.

CASE 12.—A married woman, aged 59, highly strung and fond of good living (seen with Dr. C. H. Atkinson), had shown unusually severe reactions to the extraction of teeth and also to vaccines prepared from them as a treatment for rheumatism. Over a period of two or three years she had several extremely severe abdominal attacks, starting with a girdle-like pain of colicky character, which at times "doubled her up" and necessitated morphine. With some of them she experienced headache. A year prior to my being called to see her she had been troubled by a very obstinate *urticaria*, which eventually departed after calcium injections. On April 12th, 1934, she felt "off colour," nervy and irritable, and then had one of these attacks with passage of pale stools, a temperature of 101·4, and a pulse-rate of 100. This attack, like the others, passed off "in a day or two." Possible precipitating causes had been shell-fish, smoked salmon and cream. She was intolerant of eggs and chocolate. As a child she had had bronchial troubles. Her doctor had seen her with spasmodic pain in the descending colon. I saw her on April 13th, and could find no signs of organic disease, and was of the opinion that her pains were colonic and, perhaps, an expression of allergy. On June 5th, 1934, she had a very bad attack of upper abdominal pain without vomiting, temperature 99°. There was some tenderness in the right iliac fossa. She was operated on that night for appendicitis (retro-cæcal) with localised peritonitis. After her wound had healed she experienced further trouble with obscure temperatures and abdominal pains.

Summary

Cases of "spontaneous" sensitisation or allergy have been compared with cases of "experimental" sensitisation or anaphylaxis. There is a close parallelism between the symptomatologies, subjective and objective, of serum-anaphylaxis and certain rare and alarming seizures occurring without apparent cause. These seizures are characterised by simultaneous gastro-intestinal and circulatory

symptoms, together with cutaneous manifestations or an associated history of these. They affect persons with individual and familial liabilities to asthma, hay-fever, and urticaria. In other persons showing similar liabilities we also discover a tendency to chronic or recurring disorders of stomach and bowel.

Generalised abdominal pain, vomiting, and diarrhœa, on the one hand, and pallor, tachycardia, and other shock-like manifestations on the other, are the features of the more severe and acute disorder. Recurring pain, of less intense type, in the gullet, stomach, and bowel, sometimes simulating organic disease, and looseness of the bowels are the main features of the more chronic dyspepsias.

There is little to distinguish the circulatory phenomena and subjective sensations of some vaso-vagal attacks (Gower's syndrome) from those of anaphylactic shock, and cases of Gower's syndrome may create, at the time of the attack, an equivalent degree of alarm. A case of Gower's syndrome following a second inoculation of tetanus antitoxin is described.

Referring to my notes of 19 cases filed under the heading of angio-neurotic œdema, I find, in addition to Case 7 two examples of associated dyspeptic disturbance and two of associated vaso-vagal attacks. A similar inquiry by cross-reference into my much larger asthmatic series would necessitate a more laborious inquiry, but the association of asthma with digestive and other allergic disorders is well recognised. With relapsing and evanescent disturbances such as those under review we depend, of necessity, for advances in our knowledge more upon detailed clinical observations and case histories than upon any other method of approach. The therapeutics of the individual case are also better served by close clinical scrutiny and adjustments based thereon than by allegiance to a particular method.

Conclusions

No abdominal or circulatory disturbance should be labelled as "allergic" unless two or preferably more of the following postulates are fulfilled :—

(1) The symptoms should bear close comparison with those observed in human anaphylaxis or serum-sickness.

(2) There should be a history of idiosyncrasy in respect of some food, beverage, tobacco, drug, or other extraneous substance.

(3) There should be observed, either in conjunction or alternating with the abdominal or circulatory episodes, other accepted allergic phenomena such as asthma, hay-fever, urticaria, or angio-neurotic œdema.

(4) There should be a family history of these disorders.

(5) The disturbances should show some such intermittency or periodicity as obtains with other allergic disorders.

(6) Every care should have been taken to exclude organic disease.

To these A. F. Hurst[2] would add the occurrence of eosinophilia and a favourable response to the therapeutic administration of adrenaline during attacks. My cases have all been seen in the course of consultative work, and I have had few opportunities of putting these additional tests to the proof.

BIOCHEMICAL BASIS OF THYROID FUNCTION *

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II

In my first lecture I indicated the way in which different lines of research have contributed to the solution of the problems of the normal function of the thyroid, of the chemical nature of the specific constituent of its secretion, and finally of the ætiology of simple goitre, and I attempted to show that the main facts were explicable on a simple biochemical basis.

I wish now to consider the biochemistry of the thyroid itself in more detail, in order to try to arrive at some conclusion regarding the nature of the actual secretion of the gland, and finally to discuss briefly some points in connexion with the biochemistry of Graves's disease which constitutes the outstanding unsolved question of the pathology of the thyroid.

Iodine Compounds of the Thyroid

In the first place the question arises whether the only use to which the thyroid puts iodine is the synthesis of thyroxine or whether other organic iodine compounds also occur in the gland. It will be remembered that under the best conditions the amount of thyroxine which can actually be isolated represents only a small proportion of the iodine present in the original material. Having regard to the great chemical stability of thyroxine it is difficult to suppose that the smallness of the yield is due to destruction during the process of isolation, more especially since only a small proportion of the total iodine appears in the inorganic form. There is therefore a strong suggestion that organic iodine compounds other than thyroxine exist in the thyroid, and if we study the matter more closely we find that such is indeed the case.

After the preliminary hydrolysis of thyroid gland with dilute baryta which constitutes the first step in the isolation of thyroxine we find that the iodine may be divided sharply into two approximately equal fractions. Acidification of the alkaline solution after hydrolysis produces a precipitate; in this precipitate is contained the whole of the thyroxine of the original material, and in accordance with this the precipitate also contains the whole of the physiological activity. The filtrate however contains about half the total iodine, nearly all of which remains in organic combination. Concentration of this acid-soluble organic iodine fraction followed by more vigorous hydrolysis and subsequent purification by recognised methods leads to the isolation of a pure iodine-containing compound which turns out in fact to be 3 : 5-diiodotyrosine. Furthermore, a careful quantitative study of the isolation of thyroxine and diiodotyrosine indicates that these two compounds between them account for the whole of the iodine of the thyroid (Harington and Randall 1929[1]).

The proof of the occurrence of diiodotyrosine in the thyroid evidently provides strong support for the hypothesis of the biological origin of thyroxine which was discussed in the previous lecture. At the same time the fact that separation of the iodine into acid-soluble and acid-insoluble fractions by mild hydrolysis is accompanied by concentration of the physiological activity in the latter seems at first sight to indicate that diiodotyrosine makes no direct contribution to the active secretion. Facts are now available, however, which cast doubt on the correctness of this assumption.

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[2] In Price's Text-book of The Practice of Medicine, London, 1933.

* The Oliver-Sharpey lectures for 1935, delivered before the Royal College of Physicians of London on March 26th and 28th. Lecture I. appeared in our last issue.

Relation of Thyroxine to Total Physiological Activity of the Thyroid

Although there is no known physiological effect of the thyroid which cannot be qualitatively reproduced by thyroxine it is quite impossible to equate the physiological activity of a given sample of thyroid with that of the thyroxine which can be isolated from it or even with that of the maximum amount of thyroxine which it can contain on the basis of the acid-insoluble iodine. The physiological comparison of whole thyroid gland with thyroxine is admittedly difficult and inaccurate, since thyroid gland can only be administered by mouth while thyroxine is only fully effective when given by injection; the preparation of a degradation product of thyroglobulin which I shall shortly describe however has made it possible to surmount this difficulty in an indirect manner, and it is now perfectly clear that a loss of physiological activity is indeed involved in the process of isolation of thyroxine.

Such a loss of activity might be explained in various ways. As has already been pointed out, the great stability of thyroxine makes it unlikely that it has undergone any change in its molecular constitution during the process of isolation, so that it is unnecessary to assume that thyroxine represents an artificial transformation product of a more active precursor until all more probable explanations fail. One change will however undoubtedly have occurred during the isolation of thyroxine—namely, racemisation due to the alkaline hydrolysis employed. Since physiological activity is often profoundly influenced by stereochemical configuration the effect of this alteration on the physiological properties of thyroxine must first be considered. A decision on this point can be reached by the pharmacological comparison of the artificially prepared optically active forms of thyroxine, as a result of which it appears that *l*-thyroxine (which will subsequently be shown to be the naturally occurring form) is only some three times as active as *d*-thyroxine (Gaddum 1929–30). The most recently published results indicate indeed that the difference in activity between the two forms is even less than this, so that it is obvious that racemisation will not help us to explain the deficit of activity of thyroxine compared with that of the thyroid gland from which it is derived.

A line of investigation which has thrown some light on this problem is one which was designed primarily with the purpose of isolating optically active thyroxine.

It has already been mentioned that the earlier workers on the chemistry of the thyroid were unsuccessful in their attempts to isolate the active principle by enzymic hydrolysis of the gland. A renewed attack on the problem (Harington and Salter, 1930) showed however that under properly chosen conditions a far-reaching degradation of thyroglobulin could be effected by the aid of proteolytic enzymes without the simultaneous extensive liberation of iodine from its organic combination which had frustrated previous attempts. The main factor in the success which was finally attained was the use of large amounts of highly active preparations of the various enzymes, so that the time to which the material was exposed to the conditions of digestion was reduced to a minimum. The working up of the hydrolysis products was further facilitated by the fact that throughout the course of digestion the fraction containing thyroxine retained a characteristic isoelectric point, about pH 5, at which its solubility was low and at which therefore it could be separated by precipitation from the other products of hydrolysis.

By intensive digestion of thyroglobulin with pepsin, separation of the products insoluble at pH 5, and redigestion of these with trypsin, a degradation product could be obtained which contained about 15 per cent. of iodine. Subjection of this material to a succession of chemical fractionations which need not be discussed in detail but which involve no drastic treatment led eventually to a product from which a small amount of thyroxine could be separated. This thyroxine was lævorotatory, as had been anticipated from the fact already mentioned that *l*-thyroxine is the more active isomeride.

From our present point of view however the main interest of these experiments lies in the properties of the digestion product of thyroglobulin which was left in the mother-liquors from the final isolation of thyroxine. This material contained about 50 per cent. of iodine, all of which could be shown to be present in thyroxine; moreover, analyses of the iodine and nitrogen contents showed that all the thyroxine which was present must be in peptide combination with other amino-acids, which were estimated to be three or four in number.

This relatively simple thyroxine-containing material derived from natural sources has a range of solubility much greater than that of thyroxine itself, and is readily absorbed when given by mouth; on the other hand, owing to its reasonably low molecular weight, it can also be administered intravenously with safety. It can therefore be compared on the one hand with whole thyroid gland by the oral route and on the other with free thyroxine by the intravenous route. We have thus for the first time the possibility of obtaining an effective comparison between the real physiological activities of thyroxine and whole thyroid gland.

The results of comparison of the thyroxine peptide with free thyroxine show, as is to be expected, practical identity of action when the compounds are injected and an enormous difference of activity in favour of the peptide when both are given by mouth, the doses in all cases being calculated on the basis of equivalence in iodine.

When the peptide was compared with whole thyroid gland, both being administered orally, it appeared at first as if the peptide were definitely more active than the equivalent amount of thyroid, and I was myself persuaded at one time that this experiment explained the discrepancy under discussion. For if these results had been correct they would have meant that the activity of thyroxine in the peptide was enhanced as compared with that of the free compound by virtue of the very fact that it was in peptide combination. Even though the apparently superior activity of the peptide was not quantitatively great enough to account for the whole of the discrepancy, the general conception of the enhancement of the activity of thyroxine by combination with other amino-acids seemed adequate to account for the facts, for there was no reason to suppose that the properties of this particular peptide, obtained as it was by artificial digestion of thyroglobulin, represented the highest degree to which such enhancement of activity could attain in the actual secretion of the gland.

Work which has appeared since, however, has forced me to the conclusion that this hypothesis, at least in the simple form outlined above, can no longer be maintained. The extensive and careful investigations of Salter have shown conclusively that the peptide has identical activities when given by mouth and by injection, and that, iodine for iodine, a dose of peptide by mouth is equivalent to one of thyroxine intravenously. On the other hand, the peptide and whole thyroid gland have practically identical physiological activities when given by mouth, the tests being made by the most accurate available method—namely, by the effects on the basal metabolic rate in human myxœdema (Salter, Lerman, and Means, 1933; Means, Lerman, and Salter, 1933). Since thyroid gland, as has already been shown, does not usually contain more than half its iodine in the form of thyroxine, it is evident that we are still left with a very serious discrepancy to explain.

Possible Nature of the Actual Secretion of the Thyroid

I am unable at the present time to offer an explanation of the difficulty which can claim any experimental support. I am, however, unwilling to accept the facile explanation of the loss of activity involved in the isolation of thyroxine which is based on the assumption that total destruction of an independent active principle is caused by the methods of isolation employed. Not only is there complete lack of positive evidence in favour of such an assumption, but all the knowledge which we possess of the chemical features responsible for the type of physiological activity exhibited by thyroxine indicates the intrinsic unlikelihood of the existence of a second unstable active principle. The matter seems to me sufficiently important to justify a little theoretical consideration, and I should like briefly to outline a hypothesis which seems to me to be adequate to cover the facts as at present known.

Until recently the generally accepted method of chemical assay of thyroid gland for therapeutic purposes consisted in estimation of the total iodine content, on the assumption that all of this iodine was involved in the active principle. When it was shown by the work which I have described that in actual fact only a part, and a somewhat variable part at that, of the total iodine represented thyroxine, the remainder being present in the form of the physiologically inactive diiodotyrosine, it seemed reasonable to base the chemical assay of thyroid gland on its content of thyroxine-iodine rather than of total iodine. A method based on this principle, for which I regret to say I am myself largely responsible (Harington and Randall, 1929[2]), has been adopted in the new British Pharmacopœia; in this the preparation of thyroid is standardised to contain a certain amount of iodine which is insoluble at pH 5 after preliminary alkaline hydrolysis, and which may therefore be taken to represent thyroxine. Now it was shown by Gaddum and Hetherington (1931) that the physiological activities of various preparations of thyroid did not in fact run strictly parallel with their thyroxine-iodine contents; furthermore, carefully conducted recent work, particularly that of Salter already referred to, seems to show that the activity of any given preparation of thyroid is determined after all by its total iodine content, and that therefore the original method of assay by total iodine content was fundamentally correct.

If this is indeed the case, and if we accept the experimental results which I have described and which show (*a*) that the whole of the iodine of the thyroid can be accounted for between thyroxine and diiodotyrosine, and (*b*) that after preliminary mild hydrolysis the whole of the physiological activity is concentrated in the thyroxine-containing fraction, we are forced to the conclusion that this mild hydrolysis has effected some change as a result of which proportionality has ceased to exist between total iodine and physiological activity; we must further assume that, in so far as the whole gland is concerned, the diiodotyrosine fraction must contribute to the activity, although when separated this fraction is entirely inactive.

I can conceive of only one explanation which will fit these facts—namely, that the molecule of the complete active secretion of the thyroid contains both thyroxine and diiodotyrosine and that some linkage between these two is ruptured during the hydrolysis which is a necessary initial stage in the isolation of thyroxine. As a result of such a rupture it would not be surprising to find residual physiological activity confined to that fraction which contains the more highly specific and characteristic constituent—namely, thyroxine.

I do not suggest that the linkage between thyroxine and diiodotyrosine is direct; indeed I am fairly certain that it is not so, for, having with some difficulty synthesised both thyroxyldiiodotyrosine and diiodotyrosylthyroxine, I have been surprised and somewhat disappointed to find that both these peptides are less active than thyroxine itself. This negative result however does not mean anything, for it is possible and indeed likely that in the active secretion the iodine-containing amino-acids are united through an intermediate chain of ordinary amino-acids. Experiments bearing on this point are in progress in my laboratory at the present time and in the meanwhile the whole conception must remain entirely hypothetical. I feel, however, that it does afford a reasonable explanation of the two main difficulties with which we are still faced in connexion with the normal biochemistry of the thyroid—that is, the loss of activity involved in the isolation of thyroxine and the fact that the activity of the whole gland is proportional to the total iodine and not to the thyroxine which it contains.

If we may for the moment assume the truth of the idea which I have advanced we may now form a connected picture of the normal series of events in the thyroid gland. It is well known that the thyroid possesses a very strong affinity for iodine and that any of this element which finds its way into the blood stream is rapidly concentrated in the gland. It may be supposed that the iodine which reaches the thyroid is first introduced into the molecule of tyrosine to form 3:5-diiodotyrosine. The latter will then fulfil a dual rôle; part of it will be converted into thyroxine by a process the nature of which I have indicated and another part will be linked with the thyroxine so formed together with other amino acids to form the true active principle of the gland. This active principle will then in turn be built up into the molecule of thyroglobulin and stored as such in the form of the colloid until it is released in accordance with the metabolic demands of the body.

Constitutional Factors in Relation to Activity of Thyroxine and Allied Compounds

Before finally leaving the question of the chemistry of thyroxine it may be of interest to discuss [illegible] the chemical features of the thyroxine [illegible] which appear to be of significance for [illegible] physiological activity, particularly [illegible] siderations have a bearing on [illegible] Graves's disease which have to be [illegible]

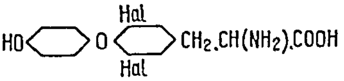
The most obvious chemical [illegible]

molecule of thyroxine are the presence of the *o*-diiodophenolic group and of the phenylether linkage. Neither of these groupings alone however is sufficient to confer thyroxine-like activity upon a compound as is shown by the total absence of such activity from diiodotyrosine and α-amino-β-di (3 : 5-diiodo-4-hydroxyphenyl) propionic acid on the one hand and from thyronine on the other. The aminopropionic acid side-chain seems to be necessary, since such compounds as thyroxamine (decarboxylated thyroxine) are devoid of activity. The full complement of iodine is not necessary for the qualitative development of the characteristic physiological activity, since 3 : 5-diiodothyronine will produce a rise in the basal metabolic rate equivalent to that produced by about 1/40 of its weight of thyroxine (Gaddum, 1929–30). 3 : 5-Diiodothyronine has indeed considerable therapeutic possibilities; it is a much more soluble compound than thyroxine and is readily absorbed when given by mouth; in appropriate doses it produces a marked rise in metabolic rate without any tendency to cause disturbances such as sometimes accompany medication with thyroxine or thyroid gland, and it possesses the obvious advantage over thyroid gland that the dose can be controlled with absolute precision (Anderson, Lyon, and Harington, 1933).

Strangely enough iodine itself may be replaced by another halogen without total loss of physiological activity; 3 : 5 : 3′ : 5′-tetrabromothyronine, the bromine analogue of thyroxine, exhibits the characteristic physiological activity of the latter, although naturally in a very much lower degree. This suggests the possibility of an entertaining experiment; it would be interesting to see whether an animal with a hyperplastic thyroid resulting from elimination of iodine from the diet would respond to administration of bromine by involution of the gland with accompanying synthesis of tetrabromothyronine in place of thyroxine.

It will be apparent that in this as in so many other fields the attempt to relate chemical constitution with physiological activity does not meet with any great measure of success; all that can be said with certainty is that obligatory requirements for the development of thyroid-like activity are the presence of the thyronine nucleus and the substitution of this nucleus with halogen atoms at least in the 3 : 5-positions (Fig. 4). It is however to be noted that no change in the molecule of thyroxine has done anything but diminish physiological activity and that no such change has caused the development of any toxic properties.

FIG. 4



Biochemical Basis of Graves's Disease

I now come to the last and most difficult subject with which I have to deal—namely, the biochemistry of Graves's disease. I approach this with diffidence, for it is disappointing to realise how little the great advances which have been made in the study of the biochemistry of the normal thyroid and of simple goitre help towards an understanding or towards treatment of the most serious disorder to which the gland is subject.

The information to be gained from the morphological or chemical examination of the thyroid itself in Graves's disease is not very great, since with equal severity of symptoms great variations both in the gross size and in the histology of the gland may be found. In general however, unless the patient has been treated with iodine, the amount of colloid is diminished and such colloid as is present is abnormal in appearance and consistency. There is always more or less hyperplasia of the glandular epithelium. As we should expect from these appearances the iodine content of the gland is low.

The morphological appearance of the thyroid in Graves's disease is similar to that of a thyroid which has undergone hyperplasia in a normal animal as the result of restriction of iodine and the Graves's disease thyroid responds to administration of iodine in a similar manner—namely, by involution with storage of colloid. The fundamental difference which distinguishes the thyroid in Graves's disease from that in the normal organism is the greatly increased rate at which the former pours out its secretion. Administration of iodine to an animal with a hyperplastic thyroid resulting from iodine deficiency causes at most a slight and temporary increase in the rate of secretion of the gland; in Graves's disease on the other hand the physical changes of involution and colloid storage which occur in response to iodine administration are accompanied by a period of restricted secretion followed by subsequent release of the active principle at as great a rate as ever, although the appearance of the gland may be relatively normal. It seems then that the thyroid in Graves's disease is suffering, as Kocher (1910) expressed it, from a "diarrhœa" in which the gland retains its natural avidity for iodine—and even its capacity for storing iodine if sufficient be supplied—but is forced, as soon as the iodine has been converted into the physiologically active secretion, to pour the latter out. The cause of the "diarrhœa" may be an intrinsic abnormality of the thyroid itself, or it may be the action of an extrinsic stimulus; since the gland still possesses its storage capacity for iodine the latter alternative seems the more likely.

Iodine Therapy in Graves's Disease

Since Graves's disease is always associated with more or less enlargement of the thyroid and since other forms of goitre had been successfully treated by administration of iodine it is not surprising that attempts were made from time to time to treat Graves's disease in the same manner. The results of such attempts were however very variable; they were occasionally reported as favourable but more often as disastrous, and the general attitude until recent years was that expressed by Trousseau (1867–73) in describing a favourable result which he had himself obtained by the accidental prescription of iodine; in general he regarded iodine as a most dangerous drug to use in Graves's disease. This point of view became profoundly modified as the result of the work of Plummer at the Mayo Clinic (Plummer and Boothby, 1924; Boothby, 1924) some ten to fifteen years ago, which indicated that striking, if temporary, improvement could be effected in patients suffering from severe Graves's disease by the administration of large amounts of iodine, and that such treatment was of great value at least as a pre-operative measure.

Now the revival of iodine therapy in Graves's disease introduced by Plummer was based upon certain theoretical considerations which had first been raised by Möbius (1896) 25 years earlier. Möbius, whilst convinced that Graves's disease was the result of abnormal activity of the thyroid, inclined to the view that this abnormal activity consisted in the production of an abnormal toxic secretion rather than in simple hyperactivity; in other words, dysthyroidism would be a better description of the condition than hyperthyroidism. Plummer defined this hypothesis more narrowly by making the additional assumption that the toxic secretion in Graves's disease was a modification of the normal secretion deficient in iodine; on this idea was based the hope that administration of excess of iodine might convert a toxic dysthyroidism into a less dangerous straightforward hyperthyroidism.

The undoubted success which can often be obtained in the treatment of Graves's disease by Plummer's method appears at first sight to afford confirmation of his theory, but a more detailed examination of the evidence leads to a different conclusion. In order to establish the theoretical basis of Plummer's hypothesis it is necessary to demonstrate a clear difference between the symptoms arising from Graves's disease ("dysthyroidism") and those arising from other forms of hyperthyroidism ("adenomatous goitre" or "toxic adenoma") and this demonstration is not easy to make. It is perfectly clear that the major symptoms of Graves's disease—namely, increased basal metabolic rate, loss of weight, tachycardia, nervous disturbances—could quite well be accounted for by simple hyperthyroidism and have in fact been known to be associated with excessive administration of thyroid ever since the introduction of replacement therapy in myxœdema; moreover, these symptoms occur also in "adenomatous goitre with hyperthyroidism." There is left the symptom of exophthalmos which is usually characteristic of human Graves's disease, but this scarcely seems a sufficient basis for the qualitative differentiation of Graves's disease from other forms of hyperthyroidism with which it has so much in common. Moreover, it appears from recent work that even this symptom can be produced experimentally in animals by a method which involves stimulation of the thyroid to continued hyperactivity.

The symptoms arising from adenomatous goitre are not influenced or are only influenced to a relatively small extent by iodine medication, and this fact has also been adduced in support of the qualitative differentiation of Graves's disease from other forms of hyperthyroidism; the argument is fallacious however, since it is well known from the work of Marine (1913) that thyroid adenomata, which are of unknown origin but must be regarded as functioning thyroid tissue, differ quantitatively from ordinary thyroid tissue in being much less responsive to variations in exogenous iodine supply; it cannot therefore be expected that a hyperplastic thyroid containing these growths should respond to iodine in the same way as a hyperplastic thyroid free from adenomata such as is found in Graves's disease.

It appears to me therefore that there is little support either on the ground of symptomatology or on that of therapeutic observations for the assumption of a qualitative difference between Graves's disease and straightforward hyperthyroidism. Moreover, the dysthyroidism theory is open to serious positive criticisms. The beneficial effect of iodine therapy in Graves's disease is limited in duration, usually to about three weeks; if Plummer's modification of the theory were correct there should be no such limitation.

It should be possible to demonstrate experimentally the presence of a toxic principle in the glands removed from patients suffering from Graves's disease; all attempts to do so have failed. Indeed, as is to be expected, the more severe the disease the greater is the degree of glandular hyperplasia and the less iodine is contained in the thyroid; in such cases the gland material is practically devoid of physiological activity.

Finally, as has been pointed out, no derivative of the normal active principle containing less than the full complement of iodine has been found to approximate quantitatively in activity to thyroxine or to possess any toxic properties whatever.

In view of the lack of positive support of the dysthyroidism theory of Graves's disease, and in consideration also of the serious criticisms which can be advanced against it, I feel some confidence therefore in dismissing the hypothesis as an unnecessary complication and in holding to the simpler assumption that all the symptoms of the disease may be regarded as manifestations of the presence in the body of excess of the normal active principle of the thyroid; furthermore, it seems to me to be fairly certain that the over-production of the active principle is due to the action of an extrinsic factor upon the thyroid. If these assumptions are to be justified however some explanation must be given (*a*) of the temporarily beneficial effect of iodine therapy, and (*b*) of the nature of the extrinsic factor which causes the thyroid "diarrhœa." Neither of these questions can be fully answered at the present time, but in both cases it is possible to make suggestions which may be worth consideration.

First of all, in connexion with iodine therapy, the most significant fact seems to be that the beneficial effect, although often dramatic, is only temporary; as a general rule the maximum improvement as indicated by diminution of the basal metabolic rate is obtained after about three weeks; thereafter the good effect gradually wears off and there is little evidence that any permanent benefit can be conferred by continued iodine medication alone. Moreover, intermittent iodine medication in Graves's disease is a definitely dangerous procedure, since there is evidence that resumption of iodine administration after an intermission may produce an acute exacerbation of symptoms. It is a matter of indifference in what form the iodine is given apart from the risk of producing iodism by the administration of large doses of inorganic iodine, a risk which may easily be avoided by giving the iodine in the form of diiodotyrosine. (This method has the theoretical advantage that the iodine is supplied in the form in which it is required by the thyroid and the practical advantage that much smaller doses of iodine are required.) In whatever form iodine is given it has precisely the same effect upon the gland—namely, that which is characteristic of the action of iodine on a thyroid which has undergone hyperplasia from any cause whatever. There is involution of the glandular hyperplasia and storage of colloid and these processes take place with great rapidity. It is this rapidity of effect which suggests a possible explanation of the favourable action of iodine in the early stages of its administration; the rapid swelling and hardening of the gland owing to colloid storage under iodine medication are often physically evident, and it has been suggested by Marine that it is this acute distension of the gland which causes an inhibition of outpouring of secretion, since the pressure set up prevents the secretion from obtaining access to the lymphatics in the ordinary way. Such a mechanical conception certainly accounts for the temporary nature of the effect, for as soon as the structural elements of the gland have been able to adjust themselves to the altered conditions the secretion will no longer be mechanically retained and the rate at which it is poured out will gradually increase until it reaches the level determined by the stimulus which is working on the gland—a state of affairs which is in entire accordance with the observed facts.

Whether this be the correct explanation of the action of iodine in Graves's disease or not it is of the greatest importance, in my opinion, that the temporary nature of the effect should be fully realised. Moreover, not only is the effect temporary but it cannot be elicited to the same extent a second time even after a long interval. The real justification of iodine therapy in Graves's disease is its value as pre-operative treatment; the attempt to use it for prolonged and unaided medical treatment is not only, according to all the evidence, foredoomed to failure, but means the loss of an opportunity to put the patient into the most favourable condition for operation. Surgical treatment of Graves's disease has indeed no basis in reason, and is at best a palliative measure; in the present state of ignorance however it seems to be the most effective way of dealing with the situation, and it appears to me unfortunate that iodine therapy should be sometimes regarded as a rival of surgical treatment when it should in reality be its ally.

Possible Extrinsic Factor in Graves's Disease

It remains finally to consider what may be the nature of the extrinsic stimulus producing the "diarrhœa" of the thyroid gland which we have concluded to be the essential feature of Graves's disease. From the welter of unrelated and ill-digested observations on the relations of the thyroid with other endocrine organs two facts stand out clearly. The first is the inhibitory effect upon the thyroid of the suprarenal cortex and the second the stimulating effect upon the thyroid of the anterior pituitary.

The first of these effects manifests itself normally in the increase of heat-production of a child which coincides with the involution of the suprarenal cortex occurring a few days after birth (Lewis and Pappenheimer, 1916; Marine, 1922); it has also been shown experimentally by Marine and Baumann (1921) and others that severe injury to the suprarenal cortex will cause an increase of heat production so long as the thyroid is intact, but not after thyroidectomy. The relationship of these facts to Graves's disease however, if indeed such a relationship exists, has not been established. No lesion of the suprarenal cortex in Graves's disease has been observed nor have the few good results at first claimed by Marine in the treatment of patients with Graves's disease with suprarenal cortical extracts been confirmed. The suprarenal cortex-thyroid relationship does not therefore take us far in the direction in which we wish to go.

It is possible that the anterior pituitary-thyroid relationship is more significant. Whilst it has long been recognised in a rather vague manner that the thyroid and pituitary are related, it is only in the last few years that it has been shown clearly that among the numerous hormones elaborated by the anterior pituitary is one which has the specific property of stimulating the thyroid to hypertrophy (Loeb and Bassett, 1929; Closs, Loeb, and Mackay, 1932; Krogh, Lindberg, and Okkels, 1932). The changes induced in the thyroid by the action of this thyrotropic hormone are precisely similar on the one hand to those produced in a normal animal by restriction of iodine intake and on the other to those which occur in Graves's disease. That is to say there is hypertrophy of the gland due to hyperplasia of the epithelium accompanied by loss of colloid and of iodine. Moreover, these changes are accompanied by physiological manifestations of hyperthyroidism; indeed, there is no symptom associated with hyperthyroidism which cannot be produced by administration of thyrotropic hormone and it even appears that with the aid of this substance the experimental production of exophthalmos in animals has become possible (Schockaert, 1932; Loeb and Friedman, 1932).

Since the thyrotropic hormone is able to elicit these effects in presence of a supply of exogenous iodine which is normally adequate, it is evidently causing a "thyroid diarrhœa" analogous to that which has been postulated as the essential feature of Graves's disease; it is tempting therefore to suppose that the anterior pituitary plays a rôle in the disease as it is seen in human beings. Here again, however, objective evidence in favour of such a supposition is entirely lacking, and in the present state of knowledge I believe it to be unjustifiable to make an assumption of this sort. One of the most remarkable discoveries in connexion with the thyrotropic hormone is that due to Collip (Anderson and Collip, 1934)—namely, the possibility of producing an antiserum by prolonged treatment of an animal with thyrotropic hormone which will antagonise the effects of the latter. It seems scarcely conceivable that this antiserum owes its effect to the production of a true antibody in the immunological sense, since the occurrence of such an antibody would be a negation of the power of the thyrotropic hormone to continue its action in the normal organism. It is, on the other hand, just possible that the antiserum contains an antagonistic principle elicited from another source—e.g., the suprarenal cortex—and that its production is thus a manifestation of a balance between two organs of internal secretion having opposing effects on the thyroid.

This somewhat complicated hypothesis is entirely without experimental support; I put it forward only to indicate my opinion that although the thyrotropic hormone has been shown to be a potential causative agent of Graves's disease, it is extremely unlikely that anything so simple as the over-production of this hormone can account for the condition. It appears to me unquestionable that the problem of the ætiology of Graves's disease involves complexities which are as yet unsuspected; it is permissible to hope however that these complexities may ultimately be unravelled by physiological and biochemical investigations such as those now being conducted in connexion with the thyrotropic hormone, and that finally it may be possible to discuss the biochemical basis of Graves's disease with as much confidence as we can now discuss the biochemical basis of normal thyroid function.

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PHOSPHATASE IN FRACTURES

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This investigation was undertaken in order to evaluate the part played by the bone enzyme, phosphatase, in the repair of fractures. Robison[1] has shown that the phosphatase mechanism plays an important part in the calcification of bone, and that in the ossification of the skeleton the enzyme is found only with the appearance of hypertrophic cartilage cells and osteoblasts. The presence of the enzyme results in the liberation of free phosphate, due to the hydrolysis of the organically bound phosphoric acid of the plasma. There is a consequent local increase in the concentration of phosphate ion which results in a super-saturation with respect to calcium phosphate of the fluid bathing the matrix of the bone. A second mechanism, not fully understood, appears to favour the deposition of the bone salt from the supersaturated solution.

The problem was approached with the object of finding (1) if the phosphatase content of the bone and callus in the region of a fracture is higher than that of the corresponding normal bone; (2) if the phosphatase content is raised, can it be related to the increase in the number of osteoblasts and hypertrophied cartilage cells in the callus; (3) if there is any increase in the phosphatase of the blood-serum, at the same time as repair of the fracture is occurring
1931 (McKeown and Ostergren)[2]; (4) if the introduction of a potent preparation of phosphatase into the fractured area would cause any change in the calcification of the callus or in the histological picture.

A series of experiments was carried out using uniform transverse fractures in the radii of rabbits. Serum phosphatase and bone phosphatase estimations were made at appropriate intervals.

Experimental Methods

Technique of producing experimental fractures.—The rabbit was operated on under ether anæsthesia. An incision was made over the middle of the right radius where it is subcutaneous. The muscles were separated from the shaft of the bone. By means of an Albee motor saw the radius was sawn through, leaving the ulna as a natural splint. The skin was closed with silk. Aseptic precautions were used. This technique was followed uniformly throughout on one or both sides, and with or without the introduction of phosphatase, as the experiment required.

Technique of preparing bone for estimation of phosphatase and histological examination.—The rabbits were killed by a blow on the back of the head. By careful dissection the bones of the fore-legs were denuded of soft tissues. The fractured radius was cut across so that a segment was obtained which extended half an inch proximal and half an inch distal to the site of fracture. A corresponding segment was prepared from the normal radius when required. These segments were cut longitudinally with a fine fret-saw. One half was used for the estimation of phosphatase; the other half was fixed in formalin, decalcified, and stained for histological study.

Phosphatase estimation.—The half segment of radius was carefully weighed and ground. It was then extracted with fifty times its weight of water for 48 hours. A few drops of chloroform were added as a preservative. The turbid extract was filtered through a plug of cotton-wool and the phosphatase content of the filtrate determined by the phenyl phosphate method of King and Armstrong.[3]

Phenylphosphate is a more suitable substrate than the glycerophosphate previously used for the determination of phosphatase; it is hydrolysed much more rapidly and the liberated phenol is more conveniently determined than the phosphate (three times as much phenol as phosphorus by weight is hydrolysed). The method is easily and quickly carried out and is suitable for the clinical laboratory. Duplicate determinations can be completed in 1 hour.

Duplicate samples of 0·5 c.cm. of bone extract or of serum are added to 10 c.cm. M/200 phenylphosphate in M/20 veronal (1·09 g. di-sodium phenylphosphate and 10·3 g. sodium veronal in 1 litre). The tests are maintained at 37° C. for 30 minutes. The enzyme action is stopped and the proteins precipitated by the addition of 4·5 c.cm. of a 1 : 3 dilution of Folin-Ciocalteu's[4] phosphotungstic-phosphomolybdic acid phenol reagent. Duplicate controls are made in the same way, but the enzyme action is stopped immediately by the addition of the phenol reagent. The mixtures are filtered. 10 c.cm. filtrate are treated with 2·5 c.cm. 20 per cent. Na_2CO_3 to bring up the blue colour due to free phenol. Colorimetric comparison is made with an 0·1 mg. phenol standard. The increase in free phenol is taken as a measure of the amount of enzyme present. The results are expressed in terms of the mg. phenol which would be hydrolysed by 1 g. of bone (i.e., by 50 c.cm. of extract) or by 100 c.cm. of serum. Each mg. of phenol liberated is considered the equivalent of 1 "unit" of phosphatase.

Technique of preparation of phosphatase powder.—The phosphatase preparation which was introduced into the site of fracture was prepared according to the method of Martland and Robison.[5] The phosphatase was finally suspended in absolute alcohol. This was removed in a vacuum desiccator at room temperature. The dry powder was tested for phosphatase activity and sterility.

The Experiments

Group 1.—In order to study the phosphatase content of bone during the process of repair the right radius was fractured in 23 fully grown rabbits. The rabbits were killed at intervals up to 73 days, and the phosphatase content of the fractured area of the right radius was compared with the phosphatase content of the corresponding area of the normal left radius. In two rabbits the specimens were discarded on account of the formation of an abscess at the site of operation. In each of the 21 remaining animals the phosphatase content of the fractured radius was higher than that of the control radius (see Chart 1). This increase was seen as early as

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the fourth day after fracture. From the results of this series of animals it would appear that there is an increase of phosphatase at the site of fracture for at least 50 days.

Group 2.—Transverse fractures were produced in both the right and left radii of six rabbits. These animals were killed over a period of 22 days. A definite rise occurred in the phosphatase content of both radii. An approximate similarity was found in the increase of phosphatase at both sites of fracture in the same animal.

TABLE I

Bone Phosphatase in Fractures (both Radii Fractured)

Days.	Left radius.	Right radius.
1	0·6	0·8
5	0·8	1·0
8	10·3	7·4
13	9·0	7·0
15	15·4	15·7
22	19·2	17·1

Group 3.—Transverse fractures were produced in both radii of 27 rabbits. About 5 mg. of phosphatase, representing approximately 3 units, were introduced into the fracture of the right radius at the time of operation. This amount was about four times as much as that usually found in a segment of normal radius. The powder used at each operation was found to be sterile, both by smear and culture, but in four cases sterile abscesses developed.

As is seen in Chart 2, there was a marked rise in the phosphatase content of both fractured radii. The quantities of phosphatase found did not differ materially in the treated and untreated fractures. It would appear that either the phosphatase was removed rapidly from the site of its introduction (by being carried away in the blood stream or by being destroyed in situ), or its presence may have militated against the production of phosphatase by the normal mechanisms. This latter possibility could well be due to the presence of considerable amounts of denatured protein in the phosphatase preparation, although the material used had been purified to the greatest possible extent and was of as high enzymic potency as any previously prepared.

SERUM PHOSPHATASE

The phosphatase of the serum was estimated at intervals in a number of rabbits in all three groups.

Group 1.—The level of the serum phosphatase was investigated following the operation in 12 of the 23 rabbits. Estimations were made at weekly intervals up to 10 weeks post-operatively, on a decreasing number of animals. Neither any consistent increases nor, in fact, any significant changes were demonstrated. One animal showed abnormally high readings throughout, and a second animal had a terminal rise in the seventh, eighth, and ninth weeks.

In *Group 2* the serum phosphatase remained normal in the 6 rabbits throughout the experiment.

In *Group 3* the serum phosphatase was done at weekly intervals for four weeks. All estimations were normal and further estimations were not done.

Thus it would appear that there is no significant rise in the level of serum phosphatase in rabbits following fractures of one or both radii; nor was any rise demonstrated following the introduction of phosphatase at the site of fracture.

HISTOLOGICAL EXAMINATION

Of the segment of bone removed from the site of fracture as described above, half was used for the estimation of phosphatase and half was studied histologically. In the preparation of the bone for phosphatase estimations it was necessary to remove the soft tissues. There occurred, therefore, the loss of variable amounts of periosteum and some osteoid tissue. This fact rendered difficult the histological interpretation of some of the sections. We are indebted to Dr. A. W. Ham, of the department of anatomy, for his careful study of the sections, which was made independent of any knowledge of the changes in phosphatase activity or of the duration of the fracture. Twelve fractures with the introduction of phosphatase, and 34 uncomplicated fractures, were examined histologically.

In the majority of the sections examined a small amount of foreign material was present. This was due to bone dust formed as a result of using a motor saw. There were practically no foreign body reactions.

Hypertrophic cartilage cells were seen in sections of bone removed soon after fracture. These cells persisted and formed a prominent feature in the histological picture, along with osteoblastic activity and matrix formation, until the sixth week when they diminished. Osteoblastic activity and the formation of bone matrix persisted for a further three or four weeks. The phosphatase content of the bone remained at its previous high level for some three weeks after the diminution in hypertrophic cartilage cells was evident. The phosphatase found at this stage may be taken to represent production due to the continued osteoblastic activity.

In every instance where osteoblastic activity and matrix production were high, there was a high degree of phosphatase activity in the other half of the segment of bone. In no specimen was a high phosphatase content recorded in the absence of hypertrophic cartilage cells, or osteoblastic activity and the formation of a matrix.

In the group of rabbits where phosphatase was introduced into the fracture, three died and three were killed during the ten days following operation. No histological sections were available from the segments of bone removed from these six animals.

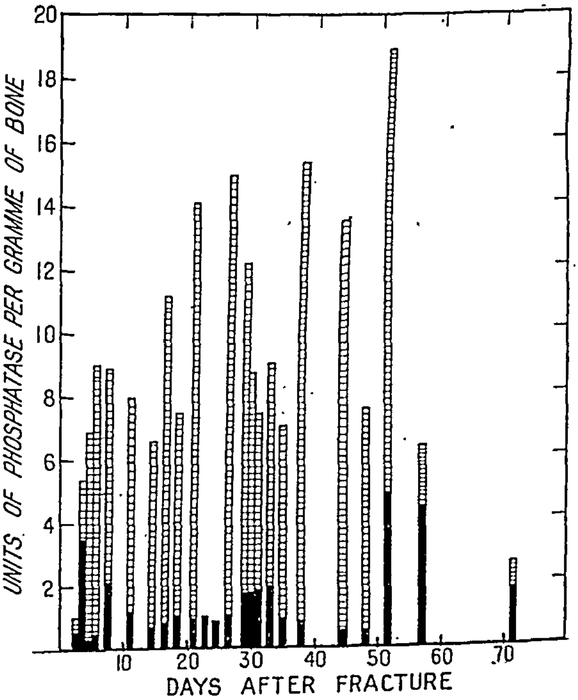

FIG. 1.—Phosphatase content of fractured and of control radii. Hatched column represents amount of enzyme in fractured segments; blackened column, amount in control segments.

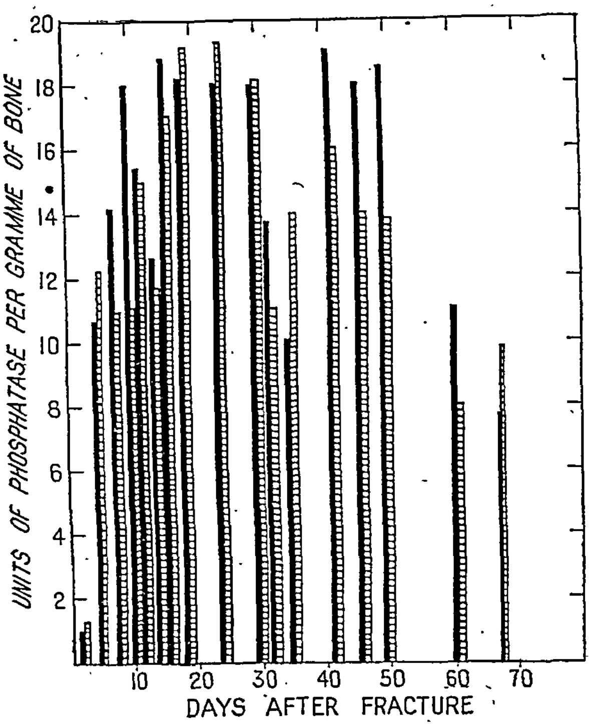

FIG. 2.—Phosphatase content of fractured radii. Hatched column, fracture of right radius with the introduction of phosphatase: blackened column, fracture of left radius (without introduction of phosphatase).

The gross appearance, which included œdema and congestion of soft tissues and the presence of some white pasty material at the site of fracture, suggested a non-suppurative inflammatory process. Sections were taken from the fractured radii of 12 rabbits killed from 10 to 67 days after operation. Examination failed to reveal any difference in the gross or histological evidence of repair, as seen in the fractures into which phosphatase had been introduced and the control fractures on the opposite legs. No evidence of the presence of the phosphatase powder could be found. No foreign body reactions were apparent.

Serum and Bone Phosphatase in Human Cases

At the same time as the animal experiments were under way, the level of serum phosphatase was investigated in a group of patients admitted to the fracture service of the Toronto General Hospital. Estimations of the phosphatase content of bone from the region of the fracture were carried out whenever possible. In two cases a sufficient amount of the hæmatoma at the site of fracture was obtained to allow of determination of the phosphatase content. The results of the serum phosphatase readings in this group of patients have been classified according to age, and according to whether bony union developed. A separate group was established for pathological fractures. Serum phosphatase is normally higher in persons under 21 years of age. The average range is from 15–20 units per 100 c.cm. of blood for the ages from 12 to 20 years. In adults the average range is from 5–10 units. These facts must be borne in mind in considering the level of serum phosphatase readings in this group of patients.

Closed fractures with bony union in patients from 15 to 21 years of age.—In a group of five patients four showed a series of normal serum phosphatase readings. One case only showed evidence of a rise in serum phosphatase. This patient (a boy of 18 years) suffered a fracture separation of the lower epiphysis of the femur. The serum phosphatase shortly after admission was 14·3 units. It rose to 32 units in three weeks and then gradually fell. As at this age the growth of the femur is not complete and the epiphysis has not yet united, the phosphatase content of the bone at this site would normally be high. 30 c.cm. of hæmatoma fluid aspirated at the time of injury contained the large amount of phosphatase of 30 units per 100 c.cm.

Fractures in patients over 21 years of age which resulted in bony union.—The group comprised 21 patients. Five of the cases required operative measures for purposes of reduction and fixation. Serum phosphatase determinations were carried out up to 12 weeks after the time of the fracture. In two cases there was evidence of a slight increase in serum phosphatase. The highest reading obtained was 17·2 units, so that the increase is of doubtful significance. A portion of the organising hæmatoma from between the fragments of a fractured olecranon, two days after the injury, showed 0·51 unit per gramme (about 50 units per 100 c.cm.).

Fractures resulting in non-union.—One case of non-union was studied in a patient below 21 years of age. Five months of immobilisation of the compound fracture of the humerus in this boy of 15 had failed to result in union. The serum phosphatase was about 25 units prior to operation and ranged from 25–30 units for the six weeks following a successful bone graft. In three cases of fracture of the neck of the femur in adults which resulted in non-union the serum phosphatase remained within normal limits.

TABLE II

Normal Ribs removed during Thoracoplasty for Pulmonary Tuberculosis, after Reflection of the Periosteum

	Units per gramme
A	4·1
B	6·1
C	8·3

Bone following Fracture

Case.	Age in years.	Material used.	Units per gramme.
D.	33	Rarefied vascularised bone from distal fragment of tibia six weeks after Pott's fracture.	3·07
E.	51	Bone from fractured second cuneiform of foot, 2 weeks following injury.	4·3
F.	50	Re-fracture of shaft of femur 4 months after old fracture bone from end of fragment.	8·6
G.	64	Non-union of fractured neck of femur, with aseptic necrosis of head of femur: bone from head.	0·88
H.	35	Fibrous union of fracture of neck of metatarsal bone 4 months after injury; bone from end of shaft of metatarsal.	5·80
I.	15	Non-union following fracture of shaft of humerus. Microscopic exam. showed normal response with viable bone; interposition of soft tissues between fragments.	16·41

Pathological fractures in patients with disease of bone.—In two cases of fragilitas ossium there was no deviation from the normal. In one case of a fracture of the femur complicating Paget's disease, the serum phosphatase was 35 and 25 units at three month intervals. One case of generalised osteitis fibrosa

[illegible]

Summary

[illegible]

REFERENCES

[illegible]

OBLITERATIVE ARTERIAL DISEASE TREATED WITH MUSCLE EXTRACT

By M. Schwartzman, M.B.

HONORARY FIRST [illegible], LONDON JEWISH HOSPITAL

In 1928 J. Schwarzmann (Odessa) suggested the use of skeletal muscle extract¹ in the treatment of angina pectoris, especially in cases where angiospasm is likely to be a prominent factor. At about the same time Vaquez, Giroux, Kisthinios, and Gley (Paris) recommended the injection of an insulin-free pancreatic extract (Angioxyl); Frey and Kraut (Düsseldorf) introduced a circulatory substance (Kallikrein) which is obtained from the urine, but is also probably of pancreatic origin; while Zuelzer (Berlin) put forward a liver extract (Eutonon) which he later modified so as to contain both liver and muscle. After a few years of trial muscle extract seems to have established itself in practice more

[illegible]

[illegible] below the horizontal plane. The le [illegible] dorsalis pedis arteries were pulseless [illegible] reaction was negative in blood and [illegible] The diagnosis was thrombo-angiitis [illegible] Mr. Mulaly's permission I started [illegible] ment in May, 1930, continuing it for m [illegible] The first month brought no apprecia [illegible] further spreading of gangrene seemed [illegible] a necrosed portion of the terminal pha [illegible] separated, discharge stopped, pain c [illegible] granulations appeared on the ulcera [illegible] December, 1930, the wounds had heale [illegible] could walk over a mile with no pain [illegible] The feet were warm and the angle of cir [illegible] was, on the left side, about 20° above [illegible] pulse reappeared in the left posterior tib [illegible]

At the end of January, 1935 (four years [illegible] ceased), he reported that he was free from p [illegible] in the legs, even on walking two or three [illegible] becomes bluish on exposure, but it is [illegible] On examination I found blanching with [illegible] but return of colour was prompt on bot [illegible] (40° above horizontal).

Case 2.—A man, aged 62, when seen in [illegible] gave a history of intermittent claudicat [illegible] His walking distance had gradually decreas [illegible] and for the last three months he had had [illegible] his left foot which became persistently blu [illegible] patches had appeared on three left toes. [illegible] feet, particularly the left, much swollen, [illegible] deeply cyanosed. The skin on three toe [illegible] down: the big toe was black with a green pa [illegible] the broken surface, and there were similar endeavour to obey. If ordered to strike a given person, that person will be relentlessly pursued until the blow has been given. No physical hardship or discomfort is allowed to stand in the way; to plunge into freezing water in the depth of winter or to bathe in boiling water offers no deterrent, and so commonly is this the case that at times mischievous youths under the influence of liquor, have, through their thoughtless pranks, caused considerable commotion and trouble by orders given in this way to an innocent cataleptic patient.

In some patients the negative aspect of these three forms of reaction appear equally clearly. Instead of repeating what is said to them they answer with a direct opposite; instead of imitating movements they make one, the significance of which is exactly the reverse; instead of obeying suggestions they act in a directly contrary manner. Thus, the reply to "one" will be "two"; to "Sapporo," "Kushiro"; to "bikki" (frog), "kaimachike" (skeleton); to "man," "kuruma" (a Japanese woman). When shown a closed fist the patient will extend her open hand and vice versa; if the observer bends, the patient will stand more erect; if ordered to approach she will retire; if bidden to withdraw she will hasten nearer; if beckoned she will look uninterestedly away, while if the observer manifests no interest she will endeavour to attract his attention.

Our attempt to photograph an "imu" patient was frustrated by the patient's objection until the photographer in disgust said "Very well then, I won't photograph you," when she hurriedly changed her attitude and begged to be filmed.

DISCUSSION

This condition appears in a race of a low cultural standard, and it is interesting to note that similar maladies are to be found amongst the natives of Malay, the Yakuts of Siberia, and the American Indians, other races whose cultural level is recognised as being lower than that of the average. The primitive spiritual life of these peoples, with their countless superstitions, legends, and traditions, and their high degree of suggestibility, are the chief causes that favours the appearance of this malady amongst the Ainu. Further, the symptoms themselves are such as may be expected in those following primitive lives still closely patterned upon the instinctive behaviour of lower animals. The echolalia and the echopraxia both in their positive and in their negative forms are strongly reminiscent of the behaviour often observed in normal children, for children will not only repeat instinctively what they hear and copy what they observe, but will also often with equal innocence and lack of malice attempt to assert themselves in withholding the answer they know to be desired, in refusing to comply with requests and in a general perversity of behaviour which appears exactly similar to the negativism of the "imu-futchi." The other less particular and less deliberately directed forms of behaviour can be equally well paralleled in the instinctive behaviour of lower animals. The excesses of violence appear like the futile and undirected flight of a bird that has wandered into the unfamiliar surroundings of a room and is attempting blindly and instinctively to escape. The cataleptic inertness can be equally well paralleled by another naturally occurring form of self-defence, that observed for example in a spider or in a woodlouse which, when suddenly disturbed, will become instantly inactive, presumably for the natural purpose of feigning death or of passing unobserved.

Thus all the symptoms of the "imu-futchi" may be regarded as due to the operation of instinctive forms of self-defence or of instinctive forms of self-assertion which are to be commonly observed in lower forms of life, which play some part in the behaviour of our own children, and which are occasionally copied for our own purposes as when we assume a defensive immobility when threatened by some beast of prey. If this view is accepted with regard to the symptomatic *content* of the attacks, it must not be inferred that the *form* of the "imu" attack is that which is commonly observed in the hysterical symptomatology of races on a higher cultural level. "Imu" and hysteria have many points in common, but the regularity with which an attack can be provoked, the suddenness of the onset, and the transitory duration, all suggest that "imu" has more automatic qualities and is easier to arouse than are hysterical attacks. The echo-symptomatology, both of hysteria and of "imu," loses in time its direct connexion with mechanisms of self-defence and becomes a mere habitual reaction, the significant inference from such patients being not that their mental content or that their instinctive reactions are any different from those of normal persons, but that they are temperamentally or constitutionally less resistive to emotional strain and are therefore liable to outbursts of emotional decontrol when faced with certain stimuli which leave the normally balanced unaffected.

If we ask why it is that the malady should appear in this particular form among the Ainu peoples, the answer is to be found in a consideration of the spiritual and domestic characteristics of that race. Their spiritual life is peculiarly primitive and, as with all such races, their degree of suggestibility is high. In this race also the social status of women is very clearly defined; the woman is forced through habit and custom to be completely submissive to the man, and this suggests one reason why the attacks may be so largely confined to women past the middle age and why they may take this particular form. Two incidents which I witnessed may serve to illustrate the argument. An old Ainu woman was sent rolling down a bank of mud by a maudlin Ainu man. In spite of this insult she did not offer a single word of protest nor any act in self-defence; her daily training in habitual submission was too strong. In another community two "imu" patients who had been aroused to an attack fell upon the men surrounding them and showed their undisguised joy in having thrown one of these to the ground.

Thus, we may regard both hysteria and "imu" as being due to repressed resentment, the relief from which repression takes the form of paroxysmal outbursts in which instinctive forms of self-defence find violent expression or dominate the behaviour, and we may further suggest that the resentment which activates the "imu-futchi" patient is that occasioned by the subordinate and submissive place to which she is relegated by Ainu tradition.

GIFT TO WELSH HOSPITAL.—At the opening of the new radiological department and ward block at the Swansea Hospital on May 16th it was announced that Mr. D. W. Davies, of Ystalyfera, Glamorgan, had given the sum of £10,000 to the hospital. The gift has made it possible to open the new buildings free of debt.

BUCHANAN HOSPITAL, HASTINGS.—It has been arranged to proceed with the building of the new nurses' home which is badly needed. Over £4500 is already in hand for this purpose, but another £500 is still required.

"IMU"

A MALADY OF THE AINU*

BY DR. Y. UCHIMURA
PROFESSOR OF MEDICINE, THE UNIVERSITY OF HOKKAIDO

THOSE habits of mind and of behaviour, which are peculiar to a given people, and which are commonly referred to as racial characteristics, may show themselves not only in common features of everyday life, but in emotional or spiritual predispositions which are, as a rule, revealed only in those individuals of the race who are the victims of some mental disturbance which renders them liable to attacks of emotional decontrol. When such psychopathic individuals break down under an emotional strain, the symptoms which appear are the result of an interplay of intellectual and emotional reactions which do not differ essentially in kind from those which characterise the more stable members of the race, and therefore an accurate study and complete understanding of the mental ailments peculiar to a given race is only possible when one has already a knowledge of the faith, superstitions, customs, and other domestic peculiarities of the people in question. This relation is a reciprocal one, and it is often found not only that such knowledge enables us to interpret morbid symptoms, but that the symptoms themselves reveal or explain otherwise obscure native superstitions.

The malady to which the name "imu" is given is found among the Ainu where it is very frequently observed, although it has attracted little attention in the medical literature of other parts of the world. In 1901 Dr. Yasusaburo Kasaki published a detailed report on this subject. Although apparently less common now than in his time, the malady is still endemic and even in the smallest communities one or two susceptible patients can be found. It is almost entirely restricted to women who have passed middle age. From our own investigations we have gained the impression that those "imu" patients whom we have observed have been slightly above the average in intelligence and sometimes also in their standard of living: their level of instruction is not lower than the normal, and they are found at all levels of social standing.

Personal observations, confirmed by information derived from their neighbours, makes it clear that in between the attacks which characterise this malady the patients are free from any peculiarities of behaviour and they are in no way to be distinguished from other members of the community. The condition of "imu" makes the patient liable to attacks of psychomotor disorder precipitated by some emotional shock. The word "imu" may be translated as meaning "severe shock": the condition itself is referred to in native parlance as "imu-futchi" or "imu-bakko," each of these suffixes meaning "old woman." It is sometimes also referred to as "tokkoni-bakko," "tokkoni" being the native word for viper, a reptile the exhibition or mention of which frequently precipitates attacks and an abhorrence of which is deeply interwoven in local superstition. Of all these terms "imu-futchi" appears to be the most suitable.

The symptoms of an attack may be many and varied, the severity depending to some extent upon the degree of emotional disturbance associated with the precipitating stimulus. But this is not always so. In some patients the mention of anything at all that is emotionally disturbing, but particularly of the words "tokkoni" or "bikki" (Ainu: bikki = frog), will lead to a sudden outburst of violence in which a woman previously perfectly normal in behaviour will act as though trapped and terrified or confronted with some immediately vital peril; she will attack indiscriminately everything that enters her range of vision, seizing as weapons anything that lies to her hand, and throwing about sticks and stones in a violent but aimless manner. Such patients may be extremely dangerous to persons around if they can seize upon a knife or any weapon; also under the influence of this excitement they are capable of exerting an amount of muscular power which would never have been expected from one of their build and age. Thus, one old woman of 70 completely destroyed a toy snake which was shown to her, by her furious blow which she delivered with her cane. At times patients will attack onlookers and then fly in terror. From this description it will be seen that these outbursts of violence may be regarded as due to the unrestrained and undirected operation of a very primitive instinct for self-defence.

The attacks do not last for more than a few minutes and the patient very quickly returns to complete normality: some appear to have no recollection of their behaviour during the attacks, while others seem to be deeply ashamed of their conduct. With less severe emotional shocks, or in patients who are less easily aroused, the disturbance often takes another form. Thus if, for instance, in the course of an ordinary conversation with a patient one's friendly tone is suddenly discontinued and a word is uttered which is not pertinent to the subject under discussion, the patient may appear suddenly bemused and will continue for a time to echo everything that is said to her. "One," you say to her and "one" the patient echoes; "you fool," and "you fool" is the answer; "bow," and she returns "bow-wow." At times such a patient will echo remarks made not to her but to someone or to something else; thus, on one occasion, while trying to get a dog to bark before feeding him with a piece of cake, I prompted him by saying "bow-wow"; to my surprise the answer came not from the dog but from an "imu-futchi" who had been standing under the eaves of a dwelling some way away and who repeated "bow-wow, bow-wow!" The patient's echoing is independent of any significance the words may have for her, for words of a foreign language are repeated in the same way. Similarly, actions are copied; clapping the hands, raising the arms, and pushing the patient backwards all elicit similar acts on the part of the patient; a condition which may be similarly described as echopraxia as distinguished from echolalia.

When in this bemused condition patients are highly susceptible to suggestion; they no longer exercise independent control of their actions and are not really answerable for the consequences of these; they will carry out orders with the utmost precision and if placed in a given position will remain cataleptically in that exact posture until released by permission to do so. If ordered to dance, the quietest and most submissive of women will dance such steps as are recognised as being an essential prerogative of the men, and a woman of over 60 will dance as gaily and as lightly as a girl, not ceasing until she is so ordered and continuing until so fatigued that she is unable for some time further to stand. If bidden to do something not within the limits of her physical ability she will nevertheless valiantly certainty of sound union and full functional use within a reasonable period.

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* Translated from the Japanese by Miss Amy Neichl.

A plaster-of-Paris slab made of several thicknesses of three-inch impregnated bandages is moulded to the volar aspect of forearm and hand after satisfactory reduction. Sponge rubber is then applied over the dorsum of the wrist. First a three-inch-square piece of half-inch thickness is placed directly on the skin and then over this, along the line of the joint, a strip one inch thick and one inch wide is applied. These are drawn down firmly by an encircling plaster-of-Paris bandage, applied over the pads in the form of a St. Andrew's cross, leaving thumb and fingers free. An annular band is also applied distal to the elbow to retain the upper part of the slab in position. Voluntary movement to the full range permitted by retentive apparatus is encouraged for fingers and thumb. At the end of three weeks the pressure pad has done its work and can be removed by splitting the side attachment of the St. Andrew's cross component. For a further three weeks the volar slab provides adequate and satisfactory splintage; it can be periodically removed for massage and gentle movement. I do not suggest that at the end of six weeks car-cranking can be safely undertaken; but the arm and wrist is strong enough for most light or medium work. An elastic adhesive bandage can with advantage be applied to give further support to the wrist at this stage.

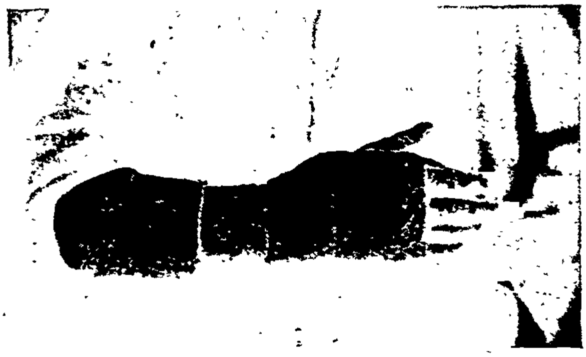

FIG. 2.—The splint applied.

Fig. 2, showing splintage as applied (with sponge rubber pad enclosed) gives probably a more definite and immediate idea of the method than any written account.

Bourne, Lincs.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

FOLLOWING the annual general meeting of this section on May 28th, Sir FARQUHAR BUZZARD, the president, being in the chair, several short communications were made, the first by Dr. C. C. UNGLEY on

Parenteral Liver Therapy

in pernicious anæmia and subacute combined degeneration. He showed two cinema films, one lent by Dr. W. P. Murphy of Boston dealing chiefly with the hæmopoietic effect of liver extract administered intramuscularly. This demonstrated the economic advantages of the parenteral route; the blood regeneration was more rapid than with liver extract given by the mouth. Simultaneous administration of iron hastened the rise of hæmoglobin concentration. A monthly injection of 3 c.cm. of liver extract (Lederle), derived from 100 grammes of liver, was usually sufficient to maintain the red blood-cell count at or above 5 millions per c.mm. In conjunction with re-educational exercises, the method gave good results in patients with subacute combined degeneration. Amongst other illustrations the film portrayed a patient, unable to stand or walk without help, whose gait three months later was almost normal.

The second film, taken in Newcastle-upon-Tyne, depicted the condition of patients with subacute combined degeneration before and during intensive parenteral liver therapy. Campolon and Pernæmon forte were given in amounts varying from 15 to 42 c.cm. a week. In most cases there was improvement in gait and in the symptoms and signs of neurological involvement. The change was sometimes striking, in that patients with severe ataxia and paraplegia recovered their ability to walk and even returned to their original employment. In one instance improvement followed the use of short-wave electrical pyrexia, parenteral liver therapy alone having ceased to be effective.

Dr. G. GREGORY KAYNE spoke of the use of

Sanocrysin in Pulmonary Tuberculosis

He said that although ten years had elapsed since Møllgaard's first publications on sanocrysin, wide differences of opinion still existed as regards indications, mode of application, and results obtained. His remarks in the present paper were based on observations made from personal contact with several continental workers. It was generally agreed that sanocrysin had no marked effect on tubercle bacilli in vitro. Møllgaard claimed at first that it had a direct bactericidal effect in the animal body, and advised the use of a serum prepared by immunising healthy animals, in the belief that it would neutralise the toxins presumably liberated by destruction of the bacilli and the cause of the severe reactions which followed. The appreciation that the metal itself might play a rôle in producing reactions, their diminished frequency with smaller doses, and the varying results obtained with the serum led to rejection of the theory of a direct bactericidal action. Alternatively it had been suggested that sanocrysin might act as an aid or stimulant to the natural tissue defences. O. Bang could not confirm Møllgaard's curative results in calves and maintained that the findings were due to using attenuated bacilli for infecting the animals and unreliable controls. Madsen and Mørch obtained positive results in rabbits, but later both they and K. A. Jensen were unsuccessful in repeating the findings. In England Lyle Cummins reported favourable results in rabbits, and Atkin concluded that sanocrysin exerted an inhibitory effect on tuberculous lesions apart from any bactericidal action it might have. Reviewing the guiding principles of sanocrysin therapy in the centres visited by him, Dr. Kayne first referred to the work of Secher, and pointed to the circumstances which prevented a just estimation of the part played by the sanocrysin in the reported results. Secher's indications were wide, and his initial dosage the highest administered at present, in the belief that "reaction greatly activates the cure"; yet his total dosage was low. His results were thus probably due to "shock therapy." Gravesen's use of sanocrysin was based on the early exudative lesion being the ideal indication, whether occurring by itself or in association with an older process. He found it a valuable aid in collapse-therapy and used moderate increasing dosage

CLINICAL AND LABORATORY NOTES

A CASE OF B. COLI MENINGITIS

By T. A. Ratcliffe, M.B. Camb.

LATE HOUSE PHYSICIAN, SHEFFIELD CHILDREN'S HOSPITAL

Meningitis due to *Bacillus coli* is uncommon. Findlay[1] states that of 789 consecutive cases of meningitis admitted to the Glasgow Royal Hospital for Sick Children between 1914 and 1929, only one was due to this organism. The condition was first described in 1895 by Schreer,[2] but only 42 cases had been reported by 1926, when the literature was reviewed by Neal.[3] Gibbens[4] in 1932 reported 3 more.

X. Y., a girl aged 6 weeks, was admitted to the Children's Hospital, Sheffield, on Feb. 1st, 1935, with a history of "convulsions at intervals for 12 days." Previous to this she had been quite well, and the onset had been sudden. There was nothing in the history to suggest birth injury, and she was a breast-fed baby. For the 12 days there had been several convulsions a day, during which "she went blue and twitched." Between the convulsions she lay still, but if her head were touched she screamed. She was constipated, and she had vomited several times. On examination the child was semi-comatose and the respirations were stertorous. The head was hydrocephalic, the sutures were all widely opened, and the fontanelle was bulging. There was marked head retraction and a positive Kernig's sign; pupils equal, but reacting sluggishly to light; abdominal reflexes absent; legs very spastic; knee-jerks much accentuated. The other bodily systems were normal.

A lumbar puncture was performed on the day of admission, and about 2 c.cm. of clear fluid was obtained (there was no increase of pressure), followed by a free flow of what appeared to be pure blood. The child's condition progressively became worse, and she continued to have several convulsions each day, the head becoming definitely more hydrocephalic. Up till Feb. 5th the temperature remained normal, but after this it rose gradually, being 100° on the 7th, 101° on the 12th, and 104° on the 13th. The pulse-rate rose from 150 to 170, and the respirations from 36 to 58. The child died on the evening of Feb. 13th.

A second lumbar puncture had been performed on Feb. 4th, with the same result as before. With so little fluid obtainable, only culture was attempted, and this gave a pure growth of the *Bacillus coli*. The mother's Wassermann reaction was negative, and radiography of the child's skull revealed no abnormality apart from the hydrocephalus. Post mortem the brain was found to be very large; the ventricles were distended with thick semi-mucoid greenish pus, the cortex being reduced to paper thickness in places. There was much pus at the base, and fairly dense adhesions between the medulla and the cerebellum. Films from the intracerebral pus showed very numerous Gram-negative organisms resembling *B. coli*. The other bodily systems showed no abnormality.

B. coli meningitis seems to be seen more often in children, especially infants, than in adults. Convulsions are usually a conspicuous feature, but the signs are frequently equivocal and do not always point so clearly to a meningitis as they did in this case. The actual diagnosis can, of course, only be made after lumbar puncture. Characteristically, the cerebro-spinal fluid is difficult to obtain. In one of Gibbens's cases aspiration was necessary, and in another no fluid could be obtained. The explanation of this appears to be the presence of much pus, and even adhesions, around the base of the brain, a state which was well marked in this case, and which Boyd[5] also describes. It is this, of course, which produces the hydrocephalus also. *B. coli* meningitis is usually considered to be a terminal event in a *B. coli* septicæmia, and some focus of infection is usually found elsewhere in the body, the middle ear being a very common site. No such focus, however, was found in this case, either clinically or post mortem, and careful questioning suggested that the onset was sudden without any prodromal symptoms. There was, moreover, no pyrexia until the latter half of the illness. Boyd[5] has described a case in which no primary focus of infection could be found. No case of recovery from *B. coli* meningitis appears to have been reported, and treatment is of no avail.

I am indebted to Dr. H. Leader, under whose care the case was, for permission to publish this report, and to Dr. H. E. Harding for details of the post-mortem examination.

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CHAUFFEUR'S FRACTURE

By W. B. R. Monteith, M.A. Camb., F.R.C.S. Edin.

Unlike a Colles fracture, which may vary quite considerably within certain limits, chauffeur's fracture has stereotyped and distinguishing features. These are too well known to need description; the accompanying photographs (*Fig. 1*) show appearances that are typical. Joint involvement is noteworthy as the cause of the pain that accompanies this lesion—pain which is more than usually severe. Accordingly, like other fractures complicated by joint-involvement, it demands complete initial immobilisation. As with the fracture of the base of the first metacarpal that goes by the name of Bennett's fracture, there is an aggravating (and sometimes disappointing) tendency for the [illegible] fragment to become redisplaced after entirely [illegible] The following method seems to justify description as a means of securing painless immobilisation with

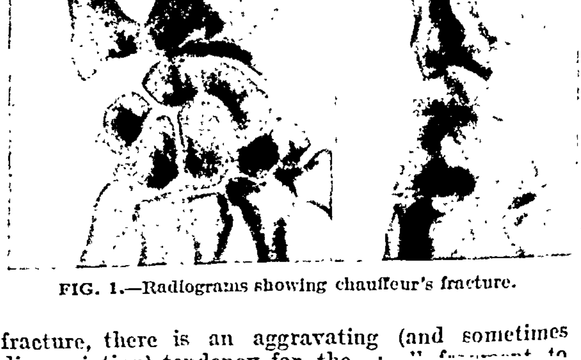

FIG. 1.—Radiograms showing chauffeur's fracture.

Of the 118 patients personally attended by Dr. Pickles, the charts relating to 23 in whom it was possible accurately to trace the chain of infection, strongly supported an incubation period of about a month, though there are, he thinks, two forms of this disease, one with an incubation period of only 2-5 days. His observations suggest that its infectivity is low and that the period of infectiousness is short. Careful observation of the alarming but transient symptoms of a disease up till then unknown in the district, enabled Dr. Pickles and his partner, the late Dr. Dean Dunbar, to identify it as epidemic myalgia or Bornholm disease. Dr. Pickles also brought forward observations in support of the belief that herpes zoster and chicken-pox are variants of the same disease. But while the Wensleydale villages are still comparatively isolated and remote, the centralisation of schools has afforded opportunities for the dissemination not only of knowledge but also of infectious disease. A zealous teacher, not realising she was suffering from influenza, in a single morning gave rise to 78 cases in an area up till then free from the disease. In an outbreak of Sonne dysentery, it was invariably the children attending school who first became ill in each of the families affected.

The PRESIDENT, Sir WILLIAM HAMER, Dr. S. MONCKTON COPEMAN, and others took part in the discussion. The work of Dr. Pickles reminded Dr. J. A. GLOVER of a cross between that of Hippocrates and of Gilbert White, and Dr. P. STOCKS spoke of the compound solution of antibodies which passes for normal serum in town-dwellers. Dr. E. W. GOODALL was not prepared to abate the orthodox latitude of incubation periods. Surgeon Captain S. F. DUDLEY agreed, but regarded the study of infection in a comparatively natural population as of great value. Prof. M. GREENWOOD underlined the "fundamental" importance of such work which he considered comparable to that of William Budd and entitled to the widest publicity. The study of the natural history of epidemic disease was of first-class importance; more and more recorded observations of this kind were needed. The communities under Dr. Pickles's observation being less artificial than either mouse herds or ships' companies, deserved the closest study.

CHELSEA CLINICAL SOCIETY

AT a meeting of this society held on May 21st at the Rembrandt Hotel, with the president, Dr. CHARLES SUNDELL, in the chair, a discussion on

Sexual Problems in General Practice

was opened by Prof. MILLAIS CULPIN. The first sex problem in practice, he said, was the practitioner himself. Just as there were practitioners temperamentally incapable of evaluating psychoneurotic symptoms and who therefore never heard them, so there were practitioners who, by their attitude, warned off any attempt to seek their advice on sex difficulties. Any doctor who was unable to ask a question about details of sex life without lowering his voice had better leave the whole subject alone. A practitioner who said he had never met a case of sexual perversion confessed to a personal inhibition. Some difficulties were purely artificial. The problem of sex education for the young only existed in the mind of the adult. There was no problem, therefore, if parents were free of taboo and answered questions with as little emotion as they would give answers about growing potatoes. Once a child had accepted the taboo, a barrier was built up, and this must be recognised by the practitioner, who could rarely penetrate it. To find out what a boy of 12 knew about sex was generally impossible, and the attempt might be recommended to the authors of little books on "What a boy of 12 should know." Adolescent girls might be asked: "Do you want to know?" and if the answer was "No," it must be accepted. If it was "Yes," the frankest possible explanation should be given, not omitting the emotional urge. To present the sexual act as a physiological process for the purpose of impregnation would make emotional difficulties worse. The adult who declared that he had known nothing of sex till the age of 18 was not uncommon. The state was probably a physiological dissociation, and was often associated with a rich unconscious phantasy life.

Masturbation was coming to be regarded as a normal phase of sex development, which made the handling of patients easier. Solemn warnings and attempts at restraint produced lasting harm. Impotence had such varied causes that every case was a separate problem. A conscious or unconscious attitude to sex as something shameful and almost sinful offered an obvious point of attack, and a discussion of the patient's upbringing might reveal twisted views. In impotence, however, the œdipus situation often called for full psycho-analysis; it was indicated by the patient's placing women in the two classes of angels and inferior beings. The worst problem was offered by the healthy woman married to an impotent man who regarded his impotence as a virtue. The practitioner in such a case should never approach the husband on the subject, nor should he tell a woman that her nervous symptoms were due to her husband's impotence. That they are her way of reacting to the situation may be true and an understanding of that view may help her. Frigidity was often part of a psychoneurotic condition and might react to the same treatment. Vaginismus was hysterical.

Homosexuality was often felt as inevitable and unquestionable, but the subject might be unscrupulous or filled with horror at himself. The second type could be helped by discussion, for he was a very isolated individual. Women rarely sought treatment for homosexuality and rarely felt distress at it. The question occasionally arose whether homosexuals ought to be school-teachers. If the condition was recognised and could be frankly discussed by the person concerned, there was less danger. Psychotherapy was not a magic wand, and was useless unless the homosexual wanted to be put on the other track. Generally, when it came to the point, he did not.

DISCUSSION

Dr. JOSEPH GEOGHEGAN divided sex problems into two classes: departures from ordinary sexual behaviour, such as impotence, homosexuality, and frigidity; and departures from ordinary social behaviour involving problems of everyday life. The doctor got to know of these things through being more than a mere doctor. A very sound rule was to consider that one would not oneself want advice. The difficulty should be surveyed with common sense. Advice should not be given. Everybody was abnormal and apt to project his or her difficulties and moral standards. Principles were for oneself; charity for others. The best thing that the general practitioner could do was to be kind, and to send the patient to somebody who understood the subject better.

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with short intervals, attempting to avoid reactions. After referring to Faber, Permin, and Würtzen in Copenhagen, and pointing out that in Norway and Sweden sanocrysin had not been used in recent years, Dr. Kayne dealt with Sayé's work in Barcelona. The latter's results were more telling owing to the very inadequate sanatorium accommodation and the low economic level in Spain. Sayé, too, believed the early exudative lesion to be the ideal indication, but advocated the use of the salt in other types of cases. Beginning with very small, he rose to large doses, being guided in that and as regards intervals by the type of case and the reactions, which he grouped as (1) focal, (2) those due to metallic intolerance, and (3) those due to metallic saturation. He had also used gold in ambulant patients, as is also extensively done in the clinics of the late Léon Bernard in Paris.

Summarising, Dr. Kayne concluded that the clear indications for sanocrysin were: (1) recent exudative lesions, unless cavitation was already present; (2) similar lesions associated with old-standing disease, either contralaterally or homolaterally when detected by serial skiagrams; and (3) as an ambulatory treatment in certain cases detected during the routine examination of apparently healthy individuals. Severe constitutional symptoms should be regarded as a relative contra-indication to sanocrysin. He did not think its use justified as a placebo. The best dosage appeared to be a progressive increase from small doses, the intervals to be based on the principles laid down by Gravesen and Sayé.

Dr. BURGESS BARNETT, speaking of the

Hæmostatic Use of Snake Venom

outlined the results of clinical trials which solutions of this venom have now received at St. Bartholomew's Hospital and elsewhere. This work was a sequel to the preliminary report by Dr. R. G. Macfarlane and himself in THE LANCET of 1934, ii., 935, in which it was concluded that the venom of the Indian snake, Russell's viper, contained a powerful blood-coagulant which it was suggested would prove of value as a hæmostatic both in normal and hæmophilic hæmorrhage. The venom, he said, behaved as though it contained activated prothrombin and it was employed as a local application to increase the prothrombin content of the blood as the latter was shed. Used in this way, in a dilution of 1 : 10,000, it was without toxic effect; the venom-formed clot of a hæmophilic was as tough and elastic as that of normal subjects, and it was formed just as rapidly. Cases in which it it had been employed fell into three groups: hæmophilic subjects, subjects of other abnormal blood conditions, and those with normal blood. Dr. Barnett recounted in detail clinical cases in which the venom solution had been used to control hæmorrhage in hæmophilics of the most pronounced type following dental extractions, accidental wounds, and from epistaxis. In epistaxis light anterior plugging with ribbon gauze soaked in the solution had always secured immediate hæmostasis. Replugging had never been necessary. Following dental extractions, although a firm clot was always formed when the socket was plugged with venom-moistened wool, there was often difficulty in carrying the clot down to the bleeding point in the presence of an alveolar abscess. In these cases the dressing often had to be repeated several times a day for several days in order to control the hæmorrhage until the septic condition cleared up. The use of a specially made dental plate, to retain the dressing and maintain pressure, had proved valuable in such cases. The use of the venom solution rendered the extraction of teeth from hæmophilics a relatively safe though still serious operation. In dressing wounds, gauze moistened with the solution was applied and pressure maintained to secure temporary hæmostasis until the clot was formed. The possibility of hæmorrhage recurring later made skin sutures inadvisable. In abnormal blood conditions other than hæmophilia there were satisfactory reports of the use of the venom as a hæmostatic in purpura, leukæmia, and aplastic anæmia; the only case in the speaker's personal knowledge was that of a boy with purpura hæmorrhagica in whom epistaxis had been stopped on several occasions. In subjects with normal blood the venom solution had been used in dentistry and general surgery. It had been employed constantly in the dental department at St. Bart.'s for six or seven months and it had only failed twice. In one of these failures it was found that the excretion of ascorbic acid in the urine was below normal; this was probably a case of subclinical scurvy. A private dentist had found the venom particularly useful in stopping the slight bleeding that often delayed the completion of dental fillings, particularly those below the gum-margin. In general surgery it had been employed by Prof. G. E. Gask to stop capillary oozing after breaking down adhesions from the surface of the liver and after stripping the capsule from a kidney. Mr. A. M. Boyd had used it successfully after tonsillectomy.

SECTION OF STATE MEDICINE

AT a meeting of this section on May 24th, the president, Dr. J. D. ROLLESTON, being in the chair, a discussion on

Epidemiology in Country Practice

was opened by Dr. W. N. PICKLES, who gave an account of observations during a period of more than 20 years on the spread of infectious disease in a number of rural parishes in the still isolated district of Wensleydale. The records of mortality in the parish register of the once flourishing market town of Wensley, now shrunk to the measure of a little village, threw, he said, a dim but suggestive light on past epidemics, e.g., the visitation of plague in 1563, which probably had much to do with the decline of the town, while a note on small-pox in 1841, written by a rector, strongly impressed the value of vaccination. Life in many rural villages follows a more orderly routine and is lived in a more circumscribed orbit than in populous places, and village doctors are able to gain a detailed knowledge of the lives, loves, hopes, and avocations of most of their patients. In the elucidation of individual problems of the origin and spread of infection this knowledge often affords help denied to those working in the din and turmoil of a city practice. Dr. Pickles urged all similarly placed observers to bring forward their results, since it is only by the summation of many observations that the full value of this opportunity of adding to our stock of knowledge will be elicited. With the help of his daughter, Dr. Pickles has kept careful records and charts of every individual case of infectious disease that has come under his notice, and, aided by an intimate personal knowledge of most of his patients, he has been able to observe a uniformity in the incubation period of certain infective diseases strongly suggesting that the limits set out in text-books may be too wide. Certain cases of measles, in which almost the precise moment of the sole opportunity for infection could be definitely fixed, had an incubation period of exactly 12 days. In an epidemic of catarrhal jaundice in 1929–30, out of a population of 5700 at risk, 250 were attacked.

Of the 118 patients personally attended by Dr. Pickles, the charts relating to 23 in whom it was possible accurately to trace the chain of infection, strongly supported an incubation period of about a month, though there are, he thinks, two forms of this disease, one with an incubation period of only 2-5 days. His observations suggest that its infectivity is low and that the period of infectiousness is short. Careful observation of the alarming but transient symptoms of a disease up till then unknown in the district, enabled Dr. Pickles and his partner, the late Dr. Dean Dunbar, to identify it as epidemic myalgia or Bornholm disease. Dr. Pickles also brought forward observations in support of the belief that herpes zoster and chicken-pox are variants of the same disease. But while the Wensleydale villages are still comparatively isolated and remote, the centralisation of schools has afforded opportunities for the dissemination not only of knowledge but also of infectious disease. A zealous teacher, not realising she was suffering from influenza, in a single morning gave rise to 78 cases in an area up till then free from the disease. In an outbreak of Sonne dysentery, it was invariably the children attending school who first became ill in each of the families affected.

The President, Sir William Hamer, Dr. S. Monckton Copeman, and others took part in the discussion. The work of Dr. Pickles reminded Dr. J. A. Glover of a cross between that of Hippocrates and of Gilbert White, and Dr. P. Stocks spoke of the compound solution of antibodies which passes for normal serum in town-dwellers. Dr. E. W. Goodall was not prepared to abate the orthodox latitude of incubation periods. Surgeon Captain S. F. Dudley agreed, but regarded the study of infection in a comparatively natural population as of great value. Prof. M. Greenwood underlined the "fundamental" importance of such work which he considered comparable to that of William Budd and entitled to the widest publicity. The study of the natural history of epidemic disease was of first-class importance; more and more recorded observations of this kind were needed. The communities under Dr. Pickles's observation being less artificial than either mouse herds or ships' companies, deserved the closest study.

CHELSEA CLINICAL SOCIETY

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DISCUSSION

Dr. Joseph Geoghegan divided sex problems into two classes: departures from ordinary sexual behaviour, such as impotence, homosexuality, and frigidity; and departures from ordinary social behaviour involving problems of everyday life. The doctor got to know of these things through being more than a mere doctor. A very sound rule was to consider that one would not oneself want advice. The difficulty should be surveyed with common sense. Advice should not be given. Everybody was abnormal and apt to project his or her difficulties and moral standards. Principles were for oneself; charity for others. The best thing that the general practitioner could do was to be kind, and to send the patient to somebody who understood the subject better.

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Dr. A. P. GIBBONS told of a man who was charged with being drunk in charge of a car on the evidence of several police officers. He was driving and ran his front wheel into a temporary wooden island, which caused the car to skid. The speaker found a recent abrasion on the man's scalp, caused probably by his head striking a part of his car. The accused elected to be tried at the sessions, and when the speaker mentioned the abrasion the case was stopped and the man acquitted. In another case concussion probably played a part. Magistrates were not always easy to please. In one case his partner certified that a man was very decidedly drunk, and the magistrate asked what tests he had used; when told there was no need for tests, he said he could not convict a man on such evidence. On the next occasion his partner applied every test he knew, and the magistrate said, "If you had all that difficulty in proving the man was drunk, he could not been have so very drunk, after all."

Dr. P. B. SPURGIN spoke of the inhibitory effect of alcohol. Under its influence a man might well be more reckless for a time, and give the impression that he was a better driver than he actually was. He protested against the idea that the function of the police surgeon was to assist the police to convict.

The PRESIDENT said that a police officer who found a man suffering from shock, short of concussion, owing to an accident, might well believe him to be drunk. There was danger in trusting to this first evidence. Cyanide poisoning was not so infrequent as was sometimes thought; death might not follow for some time after taking the poison, especially if the preparation had been kept for some time.

MANCHESTER MEDICAL SOCIETY

The Black Death in England

AT a meeting of this society held on May 1st, Dr. J. E. SPENCE said that the term "Black Death," though later in origin, has now become distinctive of the great plague of the XIV century. England was at that time a feudal State, in which the King was the absolute owner of the land. This was granted to the barons in return for homage and military services, and was subinfeudated by them to knights, whose holding was termed a manor. The manors were self-supporting and were worked in common by the villeins in return for their holdings. Although the villein was not a free man and suffered from many disabilities, knowing no luxury, he was far from a slave. His lot was little worse than that of his lord. The towns of that time, with few exceptions, were merely overgrown villages. Sanitation was unknown, disease rampant, and mortality high. But the people enjoyed their simple pleasures and recreations, and were perhaps very little less happy than the town-dweller of to-day.

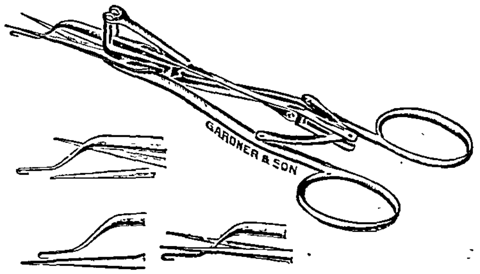
The Black Death was plague of the bubonic and pneumonic type. Originating at Caffra on the Black Sea in 1346, it spread first to Constantinople, and then by the maritime trade routes along the Mediterranean to this country, which it reached in August, 1348. It began in Dorset, and spread rapidly, reaching London in October and the north of England in the early part of the following year. It attacked especially the young and vigorous, and caused death in from twelve hours to three days. A distinctive feature was hæmorrhage from the lungs in addition to the buboes. Estimates of the mortality vary considerably, since mediæval chroniclers were extremely inaccurate in their estimates of large numbers, but research among diocesan records has shown that 44 per cent, of the clergy died of the plague, and this figure is probably approximately accurate for the people as a whole. As the population at that time was about 4½ millions, it is probable that the number who died was about 2 millions.

The havoc caused was enormous. Villages were abandoned, manors uncultivated, grain rotted in the fields, and the cattle roamed at will untended. Wages rose, and labour could not be obtained to cultivate the land profitably, hence an impetus was thus given to sheep farming, which required less labour; and the manorial system was gradually superseded by the letting of land to farmers.

NEW INVENTIONS

IRIDECTOMY SCISSORS

THE accompanying illustrations will show clearly the principles and the action of the iridectomy scissors which is essentially composed of an iris hook mounted on a pair of iris scissors, and operating on a combination of the principles of the grafting scissors and of StClair Thomson's tonsillotome. When the blades of the scissors are separated, the iris hook is thrust downward and forward between and below the blades of the scissors: on closing the blades again, the iris hook is first drawn backwards and then lifted above the level of the scissor blades which close below it at a convenient level to make a neat coloboma. For example, in making the preliminary iridectomy for a cataract extraction, a firm grip of the conjunctiva having been taken with the fixation forceps, and the linear incision completed, the iridectomy scissors are taken up with the thumb and ring finger in the handles, the index-finger placed on top of the instrument which is steadied against the side of the middle finger; the tip of the middle finger is rested on the eyebrow, and, the blades of the scissors being widely opened, the hook is entered into the wound and advanced till the edge of the iris engages; the scissors are then closed when the hook is automatically withdrawn and the iridectomy completed by the closing of the scissor blades. The lens can then be extracted in the usual way. Thus the whole operation is completed by the operator himself without the interference of an assistant, and without letting go the fixation forceps or moving the fixing hand in any way; further, the hook avoids the pinching of the iris in forceps which so often causes spasm or squeezing of the eye.



The instrument must not be used through a narrow incision for a simple iridectomy, for there is not enough free give of the corneal edge to allow of the hook lifting for withdrawal; it is apt to catch on the upper edge of the wound, and cannot be turned over to avoid this.

Messrs. J. Gardner and Son, 32, Forrest-road, Edinburgh, have kindly made the instrument for me. It may be made with straight blades, or curved, which would be more suitable for deep-set eyes.

WM. Y. TURNER, M.A., M.B., Ch.B.,
D.T.M. & H. Camb.

He did not think it was much use treating homosexuals, for whom nothing but prolonged psychoanalysis was any good. He cited a case of a woman who had vomited regularly every evening at 7 P.M., the time at which her husband came home. She had consulted 15 doctors, none of whom had thought to elicit the fact that she was sick of the sight of her husband, whose impotence had disappointed her of children. As soon as this had been made clear, the vomiting had ceased.

Dr. N. L. Lloyd pointed out that there must be some value in the universal sexual taboo, although society might have misinterpreted or misapplied it.

Dr. Halls Dally observed that co-education was more advanced in America than in this country, and that the general opinion seemed to be that it was better for girls than for boys, who tended to become less manly. Petting parties might not be a serious evil.

Mr. F. J. Ridley cited the case of a left-handed boy who had had the fullest modern sex education including cattle breeding, but at 15 knew nothing whatever about sex. He had fallen back on the taboo and suppressed the objective lessons put before him.

MEDICO-LEGAL SOCIETY

At a meeting of this society held on May 23rd, with the president, Sir Bernard Spilsbury, in the chair, a paper on

A Police Surgeon's Problems

was read by Dr. T. H. Blench (Manchester). These problems, he said, were very varied and being personal were not to be solved by academic discussion. One of the most frequently presented was the degree of alcoholic indulgence which prevented the exercise of proper control over a motor-car. Among all the tests and conditions the police surgeon must keep his main duty in mind; the effects of alcohol were transient, and the point to concentrate upon was the difference between the person charged and the average normal person. When this conclusion had been reached the examination should be stopped. Consent to be examined implied sobriety, inasmuch as drunkenness destroyed consent. The function of the police was to protect the innocent, and the police surgeon should help in this. The examinee should be placed at his ease; there should be no atmosphere of hostility. He himself reduced his examination to the minimum: walking across the floor, standing with eyes shut, coördination test (nose-touching with finger), physical examination, and five minutes' talk. He did not require repetition of set phrases; over-anxiety might vitiate their value. A history of the accident would lead to inquiry as to injury, and in all cases the state of health was investigated. There was a popular idea that if a man had taken any drink before an accident occurred, an accusation of having been under the influence of alcohol was bound to follow. Alcohol was sometimes taken to counteract the effect of shock; whether pure shock might simulate drunkenness could be verified in accidents to teetotallers. There were confirmatory possibilities by testing for alcoholism in the blood, urine, breath, or even the cerebro-spinal fluid, but to submit a person to these tests without his consent might be an assault. It was wrong to allege that the duty of the police surgeon was to support the opinion of the police.

Turning to other problems Dr. Blench said the investigation of sudden death gave opportunities for hard thinking and logical induction. Suicide by cyanide poisoning was found chiefly among persons who used that drug, such as jewellers, photographers, chemists. Some little detail would often give a clue to the person's mental condition. DeQuincey, in his "Murder as a Fine Art," said that the cut-throat was often something of an artist; in one case of murder related by Dr. Blench a young man had inflicted with a razor such a cut 4 inches deep severing the carotids and the larynx; yet the girl walked fifty yards after it. In a case of burglary a bitten apple was left behind, and a smart police officer became suspicious of a man who had lost a tooth. A mould of his mouth was found exactly to fit the apple, and the man was convicted. On the other hand, the production of minute measurements was apt to bore the court. When new methods of detection were introduced there was the danger of over-emphasis. Laboratory investigation should supplement not replace clinical methods.

Mr. Claud Mullins, speaking of charges arising out of motoring offences, admitted that when the influence of alcohol was alleged he paid as much attention to the evidence of the police officer who saw the defendant immediately after the accident as he did to the police surgeon who did not see him until some time afterwards. He always considered these charges with the greatest care, and in four years no one charged with such an offence had left his court without a verdict against him. The Act of 1930 was very explicit: "in charge of a car while under the influence of drink or drugs to such an extent as not to have proper control." This was a very high standard. He was in the habit of putting a homely and searching question: "Would you have liked him to drive you home?" He feared the wording of the new Act had not yet percolated through to advocates generally. When the fumes of the car were alleged to be the cause of the man's helpless state, he always asked whether the windows were up, and if so why.

Mr. Roland Burrows, LL.D., remarked that the answer to the question whether a person was drunk should depend on the circumstances. If asked whether a man was too drunk to go upstairs to bed, or to go home, or to do what he was in the habit of doing in the course of his business, frequently the answer must be No. The criterion was different when in charge of a car. In such a case Mr. Mullins's questions "Would you care for him to drive you home?" went to the root of the matter. It was possible for a man to recover partially from his alcoholism if there was a considerable interval before the police surgeon's examination. Conversely some men did not behave erratically until some time after taking alcohol.

Dr. Caldwell Smith stressed the influence on the accused person of nervousness when he found himself charged at a police station; it might modify his answers to a considerable extent. In borderland cases, when the police surgeon was called up in the night, it was wise for him, after a rapid examination, to ask for his decision to be postponed until the morning. With regard to poisoning by fumes from the car, it was important to remember that the driver might not know what was amiss; he just felt unwell and soon was leaning helplessly over his steering wheel.

Surgeon-Captain M. H. Knapp, R.N., said that forty years ago the crucial question asked in cases of alleged drunkenness was, "Is he fit to go up aloft?" With regard to men driving a car well at the beginning of a journey and being apparently under the influence of alcohol at the end of it, he thought a man might well pull himself together for the first stage, and later let himself go, with the result that he crashed.

A member drew attention to the factor of fatigue. After a long motor run, especially at night, he had sometimes not felt at all sure of himself, purely as a result of fatigue.

Dr. A. P. GIBBONS told of a man who was charged with being drunk in charge of a car on the evidence of several police officers. He was driving and ran his front wheel into a temporary wooden island, which caused the car to skid. The speaker found a recent abrasion on the man's scalp, caused probably by his head striking a part of his car. The accused elected to be tried at the sessions, and when the speaker mentioned the abrasion the case was stopped and the man acquitted. In another case concussion probably played a part. Magistrates were not always easy to please. In one case his partner certified that a man was very decidedly drunk, and the magistrate asked what tests he had used; when told there was no need for tests, he said he could not convict a man on such evidence. On the next occasion his partner applied every test he knew, and the magistrate said, "If you had all that difficulty in proving the man was drunk, he could not been have so very drunk, after all."

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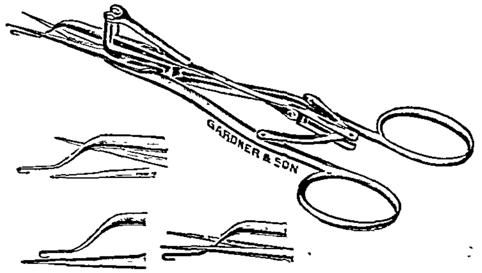
NEW INVENTIONS

IRIDECTOMY SCISSORS

THE accompanying illustrations will show clearly the principles and the action of the iridectomy scissors which is essentially composed of an iris hook mounted on a pair of iris scissors, and operating on a combination of the principles of the grafting scissors and of StClair Thomson's tonsillotome. When the blades of the scissors are separated, the iris hook is thrust downward and forward between and below the blades of the scissors: on closing the blades again, the iris hook is first drawn backwards and then lifted above the level of the scissor blades which close below it at a convenient level to make a neat coloboma. For example, in making the preliminary iridectomy for a cataract extraction, a firm grip of the conjunctiva having been taken with the fixation forceps, and the linear incision completed, the iridectomy scissors are taken up with the thumb and ring finger in the handles, the index-finger placed on top of the instrument which is steadied against the side of the middle finger; the tip of the middle finger is rested on the eyebrow, and, the blades of the scissors being widely opened, the hook is entered into the wound and advanced till the edge of the iris engages; the scissors are then closed when the hook is automatically withdrawn and the iridectomy completed by the closing of the scissor blades. The lens can then be extracted in the usual way. Thus the whole operation is completed by the operator himself without the interference of an assistant, and without letting go the fixation forceps or moving the fixing hand in any way; further, the hook avoids the pinching of the iris in forceps which so often causes spasm or squeezing of the eye.



The instrument must not be used through a narrow incision for a simple iridectomy, for there is not enough free give of the corneal edge to allow of the hook lifting for withdrawal; it is apt to catch on the upper edge of the wound, and cannot be turned over to avoid this.

Messrs. J. Gardner and Son, 32, Forrest-road, Edinburgh, have kindly made the instrument for me. It may be made with straight blades, or curved, which would be more suitable for deep-set eyes.

WM. Y. TURNER, M.A., M.B., Ch.B.,
D.T.M. & H. Camb.

REVIEWS AND NOTICES OF BOOKS

Midwifery

Fifth edition. By Ten Teachers, under the direction of Clifford White, M.D., B.S., F.R.C.P. Lond., F.R.C.S. Eng., F.C.O.G. Edited by Sir Comyns Berkeley, J. S. Fairbairn and Clifford White. London: Edward Arnold and Co. 1935. Pp. 740. 18*s*.

Multiple authorship can be employed in two ways. It is usual to find that each chapter or part of a subject has been allocated to one writer. Not so with the Ten Teachers, one and all of whom accept responsibility for the work as a whole. Each method has its disadvantages, but without doubt the joint responsibility results in the production of a work of great value.

In the fifth edition of this work, which appears under the direction of Mr. Clifford White, its well-known characteristics remain unchanged. Certain additions merit attention, such as a new and remarkably clear diagram of the fœtal circulation, and paragraphs dealing with the physiology of menstruation, the toxæmia of pregnancy, pyelitis, and puerperal infection.

The book is perhaps less dogmatic than most, and especially is this noticeable in the matter of treatment. Thus throughout the book sentences occur such as "good results have sometimes followed this procedure, but it is only applicable to a certain few cases and the results have, as a whole, been disappointing." The impression formed is that the Ten have not always been in complete agreement, and that methods of treatment of unproven value have been inserted and assessed in such doubtful terms for diplomatic reasons. A student or practitioner would like definite guidance, but obviously it is impossible always to provide this. Nevertheless, the uncertain value of a particular treatment might in some places have been stated more clearly. The value of the book is probably greater than any of the preceding editions, and the publishers have maintained the same high quality of print and paper.

Treatment of Rheumatism in General Practice

Second edition. By W. S. C. Copeman, B.Ch. Cantab., M.R.C.P. Lond., Hon. Physician, B.R.C.S. Clinic for Rheumatism, Peto-place, Assistant Physician, West London Hospital, Children's Department. London: Edward Arnold and Co. 1935. Pp. 228. 9*s*.

In the second edition of this book a number of important additions have been made. Gold salt injections are deemed to be of definite value in carefully selected cases; the contra-indications, dangers of overdosage and so forth, are clearly set out. The use of histamine is discussed both as a general treatment by subcutaneous injection and as a local application by means of ionisation. Bee-venom and intravenous calcium therapy are also described. In the chapter on manipulation the use of evipan as an anæsthetic is strongly recommended. The ease with which anæsthesia is induced by means of this drug is of advantage both to the patient and to the operator, particularly in view of the fact that often a second or third manipulation is necessary. The paragraph devoted to short wave diathermy is regrettably short, although its importance is admitted. A longer discussion on the possibilities of this form of treatment would have been welcomed, despite the expense of installation which is at present an obvious drawback to its general use. A chapter on the subject of prognosis and end-results makes it clear that quick results are not to be expected; rheumatic patients must be prepared to undergo treatment over periods of weeks or months before they can hope for real and lasting benefit. Dr. Copeman believes, and many authorities would agree with him, that "Prognosis in the rheumatic diseases is twice as good to-day as it was 30 years ago, not so much owing to the introduction of new methods as to the renaissance of interest in the subject."

The 1934 Year Book of Pediatrics

Edited by Isaac A. Abt, D.Sc., M.D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician, Passavant Hospital. With the collaboration of Arthur F. Abt, B.S., M.D., Associate in Pediatrics, Northwestern University Medical School; Adjunct Attending Pediatrician, Michael Reese Hospital. Chicago: The Year Book Publishers, Inc.; *London*: H. K. Lewis and Co. 1935. Pp. 541. 9*s*. 6*d*.

Whilst no collection of abstracts, however carefully selected, can give more than a very uncertain indication of the year's progress in any subject, the Pediatric Year Book suggests an almost bewildering amount of activity. Needless to say, much of this activity gives rather the impression of Brownian movement than any ordered journey to any known destination; there is the usual collection of rarities, from purulent parotitis to rupture of the liver; there are the inevitable banalities culled from presidential addresses and leading articles. But amongst these are such investigations as those carried out on the prophylaxis and treatment of anterior poliomyelitis and whooping cough, which, though still in the experimental stage, give some cause for optimism. It would perhaps be churlish to point out that a disproportionate amount of attention is here devoted to the contributions of American authors, but we should certainly have to adopt an unduly modest view of English pædiatrics if we were to regard this Year Book as fully representative. Considered as a heterogenous collection of abstracts, however, most of which give a reasonably fair synopsis of the original, this book will be found to serve a useful function. The references appear to be quoted accurately and in consistent form, and the illustrations are for the most part well chosen, though not all printed the right way up.

French Medicine

By Prof. Laignel-Lavastine, Professor in the Medical Faculty in Paris; Secretary-General of the International Society of Medical History; and Dr. Raymond Molinery, Gold Medallist of the Academy of Medicine; Member of the French Society of Medical History. Translated by Dr. E. B. Krumbhaar, Professor of Pathology, University of Pennsylvania. New York: Paul B. Hoeber, Inc. 1934. Pp. 187. $2.50.

The American who remarked of the British Isles that they have no climate, only samples, would probably have been tempted to pass a somewhat similar judgment on this book. This in praise rather than in criticism of it. For sampling is in itself excellent when exercised with the discretion which the authors have shown. They have undertaken to compress the history of French medicine into the *Clio Medica* series of primers on the history of medicine issued by the publishers, and any gratified ambition to deal with the subject in an encyclopædic frame of mind would have been disastrous. The portraits chosen for reproduction are, on the whole, illuminating, with the exception of certain groups of members of the Academy of Medicine whose appreciation requires a magnifying glass. The history is brought up to the present post-war period, with Leriche making surgery more and more physiological, and the leading physicians thinking more and more in the terms of surgery. The authors agree that French medicine is not what it was. "Its great periods of expansion were in the Middle Ages, the 13th century, after Louis XIV., and especially in the 18th and early 19th centuries . . . . now it only has one voice in the crowd. It must be admitted at least that in medicine its voice is always plain." An index of personal names and another index of subjects add greatly to the usefulness of the book.

Christine Murrell, M.D.

Her Life and Work. By Christopher St. John. Preface by Lady Barrett, C.H., C.B.E., M.D., M.S. London: Williams and Norgate. 1935. Pp. 133. 5*s.*

Christine Murrell entered the medical profession at a time when women doctors were still looked at askance, not only by their male colleagues, but by the general public. There were, it is true, quite a number of outstanding women practising in London, but the medical woman of that time had to have an ability considerably above the average in order to achieve success. This Dr. Murrell had without doubt, and in addition she had a forceful—though kindly—personality. She took a deep interest in all branches of her profession, though psychological illness and child welfare were the subjects that made the strongest appeal to her.

Dr. Murrell was fortunate in escaping the financial perplexities which confront most young people of either sex when faced with the prospect of establishing themselves in a good class practice. After gaining some valuable post-graduate experience she and her friend Dr. Honor Bone started practice together with such success that assistants and later junior partners had to be enlisted to cope with the work and thus one of the old-established London firms of medical women was founded. Dr. Murrell was an ardent feminist of the genial sort that has no antipathy to men—indeed she had perhaps more men than women among her personal friends. Her innate sense of justice led her to realise, however, the many difficulties which then, and even now, beset the professional woman when she tries to take her place alongside of her male colleagues. Her work for the Medical Women's Federation, of which she became both treasurer and president, was invaluable, but it is rather as a keen and prominent member of the British Medical Association that she will be remembered. She took an active part in the Association's medico-political activities, was the first woman member of its council, and it was as an outcome of the high esteem in which her work was held that she was elected last year, with the support of the Association, as a direct representative to the General Medical Council. Unfortunately the illness from which she died had already incapacitated her, so that she was unable to take her seat on the Council.

Dr. Murrell had a strong, resolute character, and did not tolerate fools gladly. She liked to get her own way, but even those who did not always agree with her admitted that her way was usually the best way. The affection and admiration that she inspired is shown by the fact that two memorials are being raised to perpetuate her memory. The first is a fund, which aims at equipping part of a new infant welfare centre at the St. Marylebone Health Society in her name, and the second project, is to form, under the auspices of the Medical Women's Federation, a Christine Murrell Memorial Fellowship for post-graduate study for young women practitioners. This volume provides a third and an appropriate memorial, and Miss St. John has given a charming and sympathetic account of an outstanding woman.

Lumbalanästhesie in der Geburtshülfe und Gynäkologie

By Dr. E. Preissecker. Vienna: W. Mandrich. 1934. Pp. 76. Fr.50.

This small book will appeal to those who are working on the physics and pharmacology of spinal analgesia more than those whose concern with the subject is mainly clinical. The latter will, however, be interested in the author's observation that headaches after spinal injection are less frequent in pregnant women than in others. On the other hand, he has noticed that the lowered blood pressure, often a trouble after spinal injection, is accentuated by the reduction of the abdominal pressure after delivery. It is especially for Cæsarean section that he values intraspinal analgesia, and he relates a series of 150 cases with four deaths, only one of which can fairly be attributed to the anæsthetic. This is, he finds, a lower mortality than that following general anæsthesia in similar circumstances. There were six deaths among the 150 infants, but in four of these he exonerates entirely the spinal injection. The biochemistry of the spinal fluid is discussed in detail, and a chapter is devoted to the pharmacology of drugs used for endothecal injection. The book is carefully compiled and contains much valuable information.

Urinary Analysis and Diagnosis

Sixth revised edition. By Louis Heitzmann, M.D., formerly Professor of Pathology and Bacteriology, University School of Medicine, Fordham, New York. London: Baillière Tindall and Cox. Pp. 385. 22*s.* 6*d.*

This is a large book on a rather small subject, which should find a place on the shelves of every clinical pathological laboratory and side-room; in somewhat small bulk and at a correspondingly lesser price it might have made appeal to medical practitioners, students, and nurses alike. The material is well and clearly set forth; the illustrations are lavish and serviceable. On the whole the teaching is reliable; in the section on extraneous matter in the urine it is unfortunate that the illustration described as showing "normal fæces" depicts among other things, a fragment of striated muscle—one of the few findings in the fæces invariably significant of some morbid condition. If the book were somewhat reduced in bulk it would make an even wider appeal.

Clinical Laboratory Methods and Diagnosis

By R. B. H. GRADWOHL, M.D., Director of the Gradwohl Laboratories and of the Laboratories, St. Louis County Hospital. London: Henry Kimpton. 1935. Pp. 1028. 36*s.*

THE design of this book is ambitious and its scope considerable. No procedure which a worker in a hospital laboratory may be called upon to perform escapes notice; and useful sections will be found on the identification of poisons, the performance of post-mortem examinations, the preparation of extracts for allergy tests, and on many other procedures rarely present in works on general laboratory technique. Unfortunately, in common with other authors of similar works, Dr. Gradwohl has found difficulty in deciding whether he would write a text-book of pathology or of laboratory procedures. Where he roams into the field of pathology he is not a particularly illuminating guide; even on the purely practical side his descriptions of technique and methods are not always clear. More rigorous editing is required throughout. Slips such as that which occur on p. 512 should have been avoided. Here in one line it is stated that "neutral fats and fatty acids are soluble in ether; combined fatty acids or soaps are not," and a little further down that "neutral fat, free fatty acids and soaps are soluble in ether." This sort of careless writing is likely to discourage the inquiring student.

This book is attractively produced; the illustrations—colour plates, line drawings, and photographic engravings—are among the best we have met with in any book of this sort. The author makes a well-deserved acknowledgment of the skill of Mrs. Addine G. Erskine who drew and arranged them.

Bee Venom Therapy

By BODOG F. BECK, M.D. London: D. Appleton-Century. 1935. Pp. 238. 18*s.*

IN books as well as in buildings the Americans are inclined to do things on the grand scale. From its respectful dedication "To the Pathfinders of Bee Venom Therapy" to its 11 pages of bibliography this work is a magnum opus in miniature and, could they only know of it, would make every right-thinking bee carry her sting more proudly. The author's industry has brought together information about every possible aspect of bee venom, and the only criticism is that he has failed entirely to separate the grain from the chaff. A critical summary at the end of each chapter would have greatly increased the value of the book. In spite of this fault, a great deal of valuable information has been collected. The first part of the book has chapters on the medical history of the bee, animal venoms, bee venom and its effects, the results of bee-stings, sensitivity, the treatment of bee-stings. Part II. is an enthusiastic account of the results of apitherapy in arthritic and rheumatoid conditions.

We learn that the effective part of the venom is a very toxic organic base, as yet unidentified, and that the irritation of the sting is said to be due to volatile oils. In the production of injectable bee venom these oils and the protein are removed, the latter process being a secret of the manufacturers; 25,000 bees are required to produce one milligramme of pure venom. A study of the surprisingly large number of fatal cases caused by bee-stings leads to the conclusion that allergy must play the greatest part, and the sensitivity may vary very greatly between different individuals and in the same individual at different times. Adrenaline preparations seem to be the favoured remedy for severe general effects. All local treatments of bee-stings are, in the author's opinion, unsatisfactory, and we must comfort ourselves with Cicero's advice that "to mind a bee-sting is a truly feminine trait."

As to the value of bee venom therapy in arthritis and allied conditions, no scientific appraisal of its value is attempted, but at least all the information is given from which the inquiring reader can form his own conclusions.

Clinical Pathology and the Technique of Collecting Specimens

By WILLIAM SMITH, M.A., M.D., B.Chir., Pathologist to the Miller General Hospital, Greenwich. London: J. and A. Churchill Ltd. Pp. 158. 5*s.*

Dr. Smith seems to have been impressed by the number of specimens unsuitable for the particular examination demanded which are submitted to his laboratory. He has therefore written this book to explain to practitioners and others concerned with the taking of specimens the way in which these should be collected. The intention is laudable; one can but wish him luck. But we fear that to secure the correct approach of the practitioner to the laboratory will require something more than a series of lectures on the collection of specimens. Such lectures will not destroy the faith of those who, having withdrawn specimens of blood and urine in the most correct manner, submit them to the pathologist in the hope that his incantations will solve clinical problems.

The book should be of value to nurses and laboratory technicians entrusted with the collection of specimens in the wards.

Lodgings for Twelve

By H. H. BASHFORD. London: Constable and Co. 1935. Pp. 311. 7*s.* 6*d.*

Dr. Bashford's prose has a quality which recalls that of Dr. John Brown and gives conscious delight to the discriminating reader; the other sort of reader will get almost as much pleasure from these essays without knowing quite where it comes from. The author introduces us to people he has met as a child of the late Victorian era, as a boy emigrant farming in Canada, as a medical student at the largest of the London teaching hospitals, as a locum tenent, and in "a more or less open house" of his own. Many men of varied experience will have met equally interesting people and have passed on without appreciating the full flavour of their peculiarities; few indeed would be able to convey this flavour to others with such a sure touch. We enjoyed all the essays immensely and reopened the book to read again about Dr. Coley and Dr. Knight—a contrast in general practitioners, about the gallant life of Aunt Felicia, and about Lucy Saltoun; rereading both for the charm of the writing and for the wickedly apt sketches of two or three fellow students of Dr. Bashford in the very early years of this century. We looked in vain for encounters or incidents arising during his long medical career in the civil service, and can only hope that these are being reserved for publication at such a time, even if this is still remote, when they can neither infringe conventions nor cause embarrassment to colleagues or successors.

THE LANCET

LONDON: SATURDAY, JUNE 1, 1935

TO COUNTER THE ILLS OF SOCIETY

NATURE recognises no watertight compartments and yet presents so vast and complicated a structure that man's mind cannot compass its entirety. Pasteur said, "There is only one way of seeing things rightly and that is seeing the whole of them"; but specialism has become a necessity if knowledge is to increase. In no branch of applied science is this dilemma more evident than in medicine; we are continually faced with the danger that a pursuit of scientific truth may impair our sense of perspective, so that eventually we shall come to resemble the man who, knowing more and more about less and less, ended by knowing everything about nothing. The moral is that pragmatism still has a claim and that the patient is greater than his disease; and in his Heath Clark lectures Prof. MAJOR GREENWOOD has been pointing this moral with characteristic lucidity and incisiveness. His two addresses on the Temperamental Factor in Industry were in fact concerned less with industry than with life as a whole. Industry is but a function of man's economic existence; it depends on factors external to itself and it exercises its influence throughout our modern society: and if Prof. GREENWOOD chose to employ a limiting title for his discourse it would be a mistake to ignore his words simply because we may have no immediate industrial affinities. What he said on these two occasions carries a message which none of us can properly neglect.

GALEN taught the indissoluble unity of mind and body, and to this extent we are urged to return to the spirit of the ancients. We are reminded that the temperamental constitution of man is a personal characteristic which determines not only his way of life but the course and prognosis of his diseases, and we are shown how in more recent times medicine has tried to materialise—and to interpret in physical terms—something which is essentially psychological. The physician who sees in statistical data clear-cut and ready-made paths to the surmounting of individual difficulties is forgetting that statistics deal with group phenomena and with probabilities that are rendered valid only when the group is of a size statistically significant. If in addition he forgets that the science of living, with all its emotional actions and reactions, is still in the phase of gestation he is doing science a disservice and himself an injury. It is the fusing of emotion and reason in balanced harmony that makes for vivid and creative life; and medicine has not entirely ignored this fact. At the same time the mere realisation that patients have important emotional reactions is valueless unless one can see how these reactions are "touched up" by circumstances: the mere addition of psychological medicine to the medical curriculum will avail little unless we aim at making the student interested in the economic, educational, and industrial background of the patient's life. Prof. GREENWOOD says that people are unhappy in mind under the modern industrial system; H. G. WELLS says that the mass of mankind, halting in intellectual puerility, constitutes the greatest menace to civilisation; Dr. CRICHTON-MILLER, in the address appearing elsewhere in this issue, says that the ultimate stewardship of mental health lies with the individual himself. In these three statements we not only get a glimpse of the track that medicine must follow—namely, in helping to readjust the patient's psychological balance—but we see also how we must bring to bear on educational technique the results of psychological research. If man is unhappy under a system and if that unhappiness produces, as it now certainly does, varying and widespread effects on body and mind, then we require an adult-minded, psychologically poised and intellectually courageous body of men and women to bring about a change.

Medicine on its physical side can still be practised within four walls; but on its mental side—on the side that views the whole man as something greater than his symptoms—its boundaries are coextensive with life itself. Let us specialise by all means; let everyone contribute something detailed, exact and necessarily limited to the pool of knowledge; but at all costs let us also maintain at a high level the general culture of those who practise medicine. Only in this way can we possibly meet the demands that modern life places before us and help to lighten the burdens that it lays upon our patients. Miss MAY SMITH, D.Sc., in the concluding lecture of this series, showed how specific, and (to some) apparently trivial, maladjustments can cause a flare-up of emotional conflict. She believes that if we could break away from the idea of "nervous" breakdown and call it "emotional" breakdown we should be helping to clarify our pathology. Dr. CRICHTON-MILLER, on the other hand, with less regard for current feelings, would call them all "mental." Either term will serve, however, provided only that it will widen and deepen understanding of the present situation. Temperament is not yet amenable to statistical evaluation; admittedly knowledge is greatly lacking. But we know already, without room for doubt, that a very high proportion of the sickness wastage in what we term an industrial society results primarily from temperamental maladjustments and from the influence of modern life on minds which have little real insight into themselves. We are passing through one of the great upheavals in cultural history, when events move fast and changes are both profound and rapid. Besides helping people to understand themselves the medical men and women of to-day are in duty bound to pay attention to the world around them, so as to be able, wherever possible, to counter the ills and contribute to the moulding of society, that it may conform more nearly to the needs of man.

THE LISTER INSTITUTE

THOSE who are inclined to deplore the academic preoccupations of workers in medical research institutes not attached to hospitals will find little reason for discontent in the annual report of the Lister Institute for 1934–35. It so happens that this year many of the results obtained by experiment in the different departments are likely to be directly applicable in the practice of preventive or curative medicine. For example the successful passage of vaccinia virus in a cell free medium, though still capricious, gives hope of a revolution in the future methods of cultivation of this virus, and the use of elementary body suspensions as a substitute for ordinary vaccine lymph is also of the utmost practical interest. Animal experiments have shown these suspensions to be in every way comparable to ordinary lymph; they possess the advantage of bacteriological sterility and represent the virus in the purest form available. It is proposed to make human vaccinations with these suspensions when opportunity offers. An estimation of the potency of human convalescent sera in poliomyelitis is being made in collaboration with the Danish State Serum Institute; the neutralising value of a number of samples of serum from Danish cases of poliomyelitis at different periods following recovery from the disease is being tested on monkeys and compared with serum obtained at Elstree by immunisation of horses with the virus. The collaboration of workers from the institute with clinicians has suggested that the cause of acute rheumatism may be a virus and their preliminary observations have already been printed in our columns. We have also published observations on the new antigen of *B. typhosus*, named Vi because of its close association with virulence, and to the clinical confirmation of the importance of the presence of Vi antigen in vaccines injected prophylactically against infection by *B. typhosus* and in sera used in the treatment of infection by the most common type of this bacillus.

The investigation on male adult rats of the scope, applicability, and trustworthiness of the balance-sheet method for estimating the biological value of proteins has been completed. With this method, in which measurement is made of the power to maintain nitrogenous equilibrium over short periods, the influence on biological value of altering the proportion of protein in the diet has been studied in the proteins of wheat, maize, and milk. In all cases an increase in the proportion of protein in the diet has been found to lower the biological value—i.e., its utilisation has been less economical. A special study has also been made of caseinogen, both before and after undergoing the processes of heating and purification, as ordinarily carried out before inclusion in diets used in vitamin work. Purification or prolonged heating at 120° was found to have no significant effect on the biological value; heating for long periods at 150°, however, lowered both the digestibility and the biological value. The vitamin-B complex has received considerable attention, with the result that vitamin B_2 is now held to have two constituents, both necessary for the maintenance of growth and health; the one, a heat-stable lyochrome pigment, appears to be connected with a generalised skin affection seen in young rats deprived of vitamin B_2; while the other is a supplementary substance (B_6) which occurs in yeast extract and appears to be specially required for the prevention of the more florid symmetrical dermatitis called "rat pellagra" and which is regarded as the analogue of the human disease. If, however, B_6 has entered the lists, B_4 has left them, for no confirmation could be found of the existence of any antineuritic factor other than B_1. The occasional incidence of local reactions had been reported following the injection of staphylococcus toxoid for the immunisation of patients. The toxic filtrate obtained by the method of cultivation in a cellophane bag is relatively more free from non-specific constituents than that which is prepared from the broth-agar medium, and as the product has been proved experimentally to be an efficient immunising agent, this technique has been adopted for the staphylococcus toxoid supplied for clinical tests. The statement that globulin preparations from human placentæ contain immune substances which have a neutralising action on the virus of measles is being examined. A clinical trial of two batches of human globulin solution, each of which has been prepared from a large number of placentæ in order to equalise the varying antibody content, will be undertaken in the autumn, when a recrudescence of measles is expected to occur.

Only a few even of those researches with a direct clinical bearing have been mentioned; the prophylaxis of tetanus, the mechanism of urine production, the symptoms which follow adrenalectomy in rats, and the effect of gamma ray irradiation on cultures of a protozoon, are among the many other problems under investigation. More than 30 papers have been published from the institute in various scientific journals during the year and several others are now prepared for press. It is clear that under the able direction of Prof. J. C. G. LEDINGHAM, F.R.S., the staff of the four departments of the institute are extending their activities in every direction which shows promise, and by collaborating with each other and with workers elsewhere are making the utmost use of the available accommodation and resources.

THE THYROID GLAND IN HEALTH AND DISEASE

NINE years ago Prof. HARINGTON announced his synthesis of thyroxine, and the biochemists, with others who were in a position to appreciate it, experienced the thrill of satisfaction that is evoked by a beautiful and valuable chemical achievement. Since then he has been occupied with the more difficult task of elucidating the chemical changes involved in the physiological and pathological activity of the thyroid cells—deciphering the chemical language in which the thyroid talks. His Oliver-Sharpey lectures, appearing in our last issue and in this, embody some of his most recent results, and introduce certain speculations that may lead to further discoveries. Thyroxine, it is now agreed, is the important vehicle of the gland's influence, both in health and in Graves's disease, and PLUMMER's theory, that the diseased thyroid produces an abnormal and peculiarly toxic variant of thyroxine, is now being abandoned both in this country and in America. All the manifestations of hyperthyroidism, not excluding exophthalmos, can be produced experimentally by thyroxine, and all the signs and symptoms of myxœdema can be removed by it. Its action in raising the basal metabolic rate of myxœdematous patients has indeed been used as a method of physiological assay, and has helped to reveal a curious discrepancy. The activity of a sample of thyroid substance given by mouth is about twice as great as that of the thyroxine it contains, and seems to be related to the total iodine content of the sample —not, as might have been expected, to the thyroxine-iodine content, which is approximately half the total. Thyroxine in combination appears to be more potent than free thyroxine; and it must be in combination, not merely by simple peptide linkage with some other amino-acids, but with other amino-acids plus diiodotyrosine, which is the iodine-containing thyroxine-precursor found along with thyroxine in the thyroid gland. The last point is as yet hypothesis, but if it is sustained it will influence the method of assay of thyroid preparations for pharmaceutical purposes. In America the activity of a preparation is taken to be proportional to its total iodine content; the last edition of the British Pharmacopœia attempted greater accuracy by taking thyroxine-iodine content as the measure, since it can be a variable fraction of the total. It now seems that the American method may be after all a nearer approximation to the truth.

From the biochemist's point of view the first riddle of hyperthyroidism is the familiar and mysterious effect of iodine. The normal thyroid passes through functional cycles, from rest to activity, with hypertrophy and hyperplasia of its cells and outpouring of secretion, and thence by involution to a colloid state in which the secretion is largely stored. An active or overactive stage can be induced in animals by restriction of their iodine intake or by partial extirpation of the gland, and is present in man in hyperthyroidism. In all these conditions iodine administration causes the gland histologically to involute, and in human hyperthyroidism involution is accompanied by a diminution in intoxication. Prof. HARINGTON is inclined to accept MARINE's view that this effect is largely mechanical, the distension of the follicles with colloid hindering the absorption of secretion by the lymphatics, though the idea that some secretion is diverted into colloid storage until the storage room is taken up would equally well explain the apparently temporary nature of the clinical effect. In either case the characteristic feature of the thyroid in hyperthyroidism is not its anatomical structure but its functional " diarrhœa " of secretion, which may be a little modified but is not fundamentally altered by iodine. MEANS and LERMAN[1] agree fully with that general conception, but from a recent study of over 500 patients in the thyroid clinic of the Massachussetts General Hospital conclude that iodine has more than a merely temporary effect; accurate observations indicate that it applies a gentle but steady inhibition to the outpouring of secretion, so that the " diarrhœa " proceeds with its characteristic spontaneous waves of varying intensity but at a somewhat lower level so long as iodine is being given. This differs from HARINGTON's view that the iodine effect is purely temporary and cannot be elicited a second time, and it is important from the theoretical side that the issue should be settled. Practically and clinically however, it is clear that iodine can only ameliorate, and that to a limited degree; it does not strike at the prime cause of the trouble.

Can the prime cause of the trouble, then, lie outside the thyroid? Is the " diarrhœa " of the gland due to an external stimulus? The thyrotropic hormone of anterior pituitary extracts comes at once to mind, for it can produce in animals both hyperplasia and increased secretion of the thyroid. But it does so only for a week or two, and after longer continued injections loses its effect. J. B. COLLIP, seeking to explain this, has been able to produce an antiserum to the hormone by prolonged administration of it to a horse, and has adumbrated a whole series of anti-hormones which are to play opposite the recognised hormones on the endocrine stage. Prof. HARINGTON shrinks from this alarming mating of immunology with endocrinology, and wonders whether—perhaps even hopes that—the " antibody " may prove to be a hormone from the suprarenal cortex or some equally respectable source. Meanwhile the cause of Graves's disease still eludes us, and most likely " involves complexities . . . as yet unsuspected." Not a few of those, we may suppose, will be unravelled by the precise and painstaking methods of the biochemist, so well exemplified in Prof. HARINGTON's researches.

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AT a general meeting of the Royal Society of Medicine held on May 21st, Sir StClair Thomson was unanimously elected an honorary fellow. It was the only new British nomination this year. With a membership now approaching 5000, the Society has only 23 British honorary fellows. Sir StClair Thomson is the first laryngologist—indeed, we believe, the first specialist—on whom this distinction has been conferred. The society has 27 honorary foreign fellows and of these one, viz., Prof. Chevalier Jackson, is a laryngologist. No other specialty has received such distinction. The foreign fellows elected this year are Profs. Sigmund Freud (Vienna), Joseph Jadassohn (Zurich), Edouard Jeanselme (Paris), G. R. Minot (Harvard), and R. F. J. Pfeiffer (Breslau). Prof. Jeanselme, as our Paris correspondent noted last week, died before receiving the honour.

Colonel W. P. MacArthur has been appointed to succeed Major-General R. M. Ainsworth as commandant of the Royal Army Medical College on Sept. 26th next.

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[1] Means, J. H., and Lerman, J.: Jour. Amer. Med. Assoc., March 23rd, 1935, p. 969.

ANNOTATIONS

UNEMPLOYMENT AND MEDICAL BENEFIT

We referred recently to the problem which arises out of the National Health Insurance Act of 1932, under which many insured persons who have been unemployed for a long period are expecting to lose their pension rights at the end of 1935. The Government's new National Health Insurance and Contributory Pensions Bill, which was introduced on May 23rd, is intended in a large measure to remove this fear and to put on a new permanent basis the means for continuing the pension rights of the unemployed and to protect them against a reduction or suspension of cash benefits under the health insurance scheme. All insured persons on ceasing to be insurably employed have at present a free insurance period averaging twenty-one months. The Bill provides that during this period the insured person will be fully protected for pension and health insurance benefits. Beyond the period of grace any person who has been continuously insured for ten years before the date on which he ceases work, and is now unable to obtain insurable employment, will have his insurance continued from year to year and, however long this ensuing period may be, he will be sure of his pension rights, of medical benefit, and of additional treatment benefits. But he will not be entitled to cash benefits, for which, however, he can requalify if he re-enters insurable employment and pays twenty-six insurance contributions within two years. The charge in respect of pensions will fall wholly on the pensions account, but it is anticipated that the existing financial provisions will suffice and that no additional demand will be made upon the Treasury. As regards the remission of arrears of contributions, the cost, some £1,500,000 per year, will be met from an arrears fund which will be provided as to 50 per cent. by an annual Exchequer grant and as to the remainder by a levy on the approved societies—and in effect upon the insured population. Each society will contribute according to the amount of unemployment and will receive back a grant in proportion to the amount of unemployment among its own members; the arrears fund will thus be in effect a means of sharing the losses due to unemployment. The solution of the difficulty has been achieved broadly upon the lines set out on p. 1128 of The Lancet of May 11th, with the modification that instead of the whole cost falling upon approved societies half of it will be met by an Exchequer grant. It is matter for encouragement that since 1932 the percentage of unemployment among persons insured under the health provisions has decreased from 14½ to 13.

Before the Bill was introduced the Government actuary reported that in respect of the Pensions Acts solvency would be achieved until 1946, with a small margin, if the annual contributions by the Exchequer were maintained at the sums prescribed for that period by the Statute, under which in 1934–1935 the amount is £13,000,000 rising by £1,000,000 a year until 1942–1943 when it will remain stationary for four years at £21,000,000. If the average rate of unemployment for the next ten years should prove to be 13 per cent., the average rate for the last financial year, the additional cost involved under the new Bill, so far as pensions is concerned, will be covered by the pensions account until March, 1946. It is interesting to note that the finances of the pensions scheme have benefited by the fewer deaths among men and especially among married men, with the result that fewer claims have been made than had been expected. This profit must, however, have been diminished by the longevity of widows.

NARCOTIC TRAFFIC IN EGYPT

The annual report of T. W. Russell Pasha on the work of the Egyptian Narcotics Intelligence Bureau for 1934, if not as sensational as usual, is full of statistical information, heavily documented and illustrated. It deals less with external illicit traffic and more with rounding up small traffickers in opium, heroin, and hashish throughout Egypt. Smuggling still continues, despite the vigilance of the police under Russell Pasha's able direction; Suez is a hotbed of the traffic and it is alleged that not less than 3000 out of a population of 40,600 are in some way connected with the contraband trade. Numerous seizures of hashish and heroin are reported, often concealed with an extraordinary amount of ingenuity. A new feature is the growing habit of resorting to "black tea" as a narcotic—that is, tea repeatedly boiled until a heavy dark brown residue is obtained possessing narcotic and toxic properties which render the addict incapable of work and result in digestive disorders. This black tea habit is said to have arisen from the restrictions placed upon the use of hashish; the peril arising from the latter, by way of cigarette smoking (marihuana) in the United States and Canada, is now engaging the attention of the Opium Advisory Committee at Geneva. The Egyptian Government would support a world-wide outlawing of Indian hemp, but this apparently would not be acceptable to the Indian Government, owing, it is said, to its association with certain religious rites of the Hindus.

FRACTURE DISLOCATION OF THE LOWER RADIAL EPIPHYSIS

Injury to the lower epiphysis of the radius is comparatively common in boys. The lesser degrees of displacement give rise to little or no anxiety, but every now and again a case is seen with a considerable backward dislocation of the epiphysis, usually associated with splintering of the shaft posteriorly. The greater the surgeon's experience the less will be the confidence with which he attempts a closed reduction; for it will often fail even after repeated attempts under full general anæsthesia. On the other hand, although a poor position is the final result of treatment, ultimate deformity of the wrist which can be traced to previous epiphyseal injury is *not* a condition met with clinically. Struck by the fact that he has never seen such a deformity in his work in the out-patient department of the Boston City Hospital, A. P. Aitken [1] has re-examined 58 patients at periods of 2–9 years after their discharge from treatment for various degrees of fracture and fracture-dislocation of the lower radial epiphysis. Of the 58 patients, 8 were girls and 50 boys, and this corresponds with the experience of other observers; thus E. Bergenfeldt [2] described a series in which there were 118 boys and 18 girls. In 2 of Aitken's cases the injury was bilateral; in 28 the posterior edge of the diaphysis was damaged, and in 19 there was an associated injury to the ulnar styloid. No attempt at reduction was made in 17, but in all the others the position was considered to require improvement. In 7 cases there were two attempts at reduction, and in 4 cases there were three. Osteotomy was carried out in 4 cases. The results of the 60 fractures, as estimated at the time of discharge from hospital, are summarised thus: normal to good position, 26; slight displacement, 20; fair to poor position, 14. At the time of re-examination 2–9 years later no deformity could be found in any of them, even when the original displacement had involved a quarter or half the thickness of the shaft. Malposition in this injury does not persist, and we seem to be safe in predicting that in two or three years at latest the normal relationship of epiphysis and shaft will be restored. The other question which Aitken investigated was the effect of epiphyseal injury on the growth in length of the radius. He found that premature ossification and retardation of growth did undoubtedly occur, but were on the whole negligible. Isolated cases have been reported in which conspicuous deformity persisted, but these he attributes to excessive damage at the time of injury. The injury must certainly be very severe, for osteotomy through the epiphysis had been performed in one of Aitken's patients without giving rise to any appreciable shortening, and repeated manipulation seems likewise to be harmless in this regard. Where shortening was measurable, it was only about 1/16 inch; in but one patient was it as much as ⅜ inch. A few cases, indeed, showed the opposite effect—a slight stimulation of growth.

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[1] Jour. Bone and Joint Surg., April, 1935, p. 302.

[2] Acta Chirurg. Scand., vol. lxxiii., suppl. xxviii.; see The Lancet, 1934, i., 308.

It is interesting to note that these results agree with those reported by Bergenfeldt for radial epiphyseal injuries.[2] In view of the ultimate history of the cases Aitken has good reason for thinking that where one attempt at accurate reduction fails, repeated manipulation is unnecessary. He believes that the open operation of osteotomy is not justifiable.

AMERICAN COMMENT ON THE OSTEOPATHS BILL INQUIRY

IN his presidential address to the General Medical Council on Tuesday afternoon, Sir Norman Walker recalled the evidence which he gave before the select committee of the House of Lords when considering the registration and regulation of osteopaths. "I took the opportunity," he said, "to expound the merits of our British system of one register for qualified medical practitioners, and am hopeful that the system which has worked, and worked well, for nearly eighty years will be maintained." Sir Norman also recalled in his address the words of an earlier president, Sir Richard Quain, who forty-three years ago said it was recognised more and more every year that the Council is doing all in its power to secure the higher education of the profession, and to elevate and maintain its character in all that is essential in connexion with the welfare of the public. "In some other countries," Quain added, "these duties devolve on Government officials: happily here they are placed in our own hands. . . ." In a leading article in the current issue of the *Journal* of the American Medical Association, the editor remarks, "Great Britain seems to have realised the value of its own method of control," and he adds, with obvious regret, "Apparently it still requires some extensive education of both legislators and the American people to bring them to a realisation of the necessity for basic science legislation in this country." In America, in contrast to this country, the practice of healing is forbidden except to those who are registered, and consideration of this fact should, the *J.A.M.A.* says, emphasise to every intelligent person the necessity for developing in the United States, through the establishment of basic science laws, a minimum standard of education for all who propose to heal the sick, regardless of the method by which such healing is to be brought about. There is in the leading article a thumbnail picture of the result of the inquiry which, it is remarked, "occupied a good many days and cost a lot of money. It brought out the fact that the proponents of the legislation were not capable of framing a definition of osteopathy that would distinguish it from other healing cults. It made clear the fact that the osteopaths claim that their art and practice cover the whole field of medicine, and that osteopathy is based on a pathology and a theory of causation which are peculiar and in no sense of the word established. Although the osteopaths were willing to accept certain limitations of their work and to stress spinal manipulation, they claimed the right to use surgery of all degrees and drugs of many varieties. Indeed, they claimed equally to prevent disease by spinal manipulation and to limit infectious disease by this process."

THE BLINDING FILARIA IN AFRICA

BLINDING infection with the filarial worm *Onchocerca volvulus* has been found by J. Bryant[1] to be a major health problem in that part of the Sudan which drains into the Bahr-el-Ghazal and the Sudd regions of the Upper Nile. An endemic blinding disease seems to have been present locally in this province for at least sixty years, but it now has a wide though patchy distribution, and where it exists at all its incidence is astonishingly high and increasing. The most striking instance quoted is that of a tribe on the Lau river, Yirrol district, among whom the disease was unknown in 1933 and where now 8 per cent. of the adult taxpayers have had to be exempted from taxation because of blindness. This last takes two forms. One is a keratitis with lack-lustre, and later vascularised and opaque, cornea, iritis and choroiditis, with slow obliteration of the pupil, and with microfilariæ present throughout the eye; it is accompanied by intense photophobia and may progress slowly for years. The second is initiated by a short-lived lacrymation, passing in two or three weeks into night-blindness and reaching its climax in two or three months, by which time blindness may be complete, or partial, or only complained of at night; the lesions are irregular atrophy of the retinal layers, particularly of the nerve-fibres, with pigment masses in or on the retina, but no microfilariæ in any structure of the eye. Yet there is reason for believing that this second form is onchocercal in causation; for whereas among 750 adults paraded for sleeping sickness inspection only 9 per cent. showed manifestations of onchocerciasis, the incidence of such manifestations in cases of "Sudan blindness" (as Bryant calls it) was 58 per cent. *Simulium damnosum*, an established carrier of onchocerca infection in Africa, swarmed in these parts, the foci of disease being rocky streams commonly in the forest country. The search for onchocerca as the cause of the local blindness was made on the suggestion of J. Hissette,[2] who has shown what a scourge this worm has become within the last few years by producing wholesale blindness of inhabitants of certain parts of the Belgian Congo.

It may be recalled that E. Brumpt, after investigating the blinding filaria of Guatemala, held th[illegible] *it* differed—somewhat in morphology and striking[illegible] ocular effects on man—from *O. volvulus* for l[illegible] in Africa, and that he named the New World form *O. cæcutiens*. As to morphology, J. H. Sandground,[3] after examination of onchocerca worms from various sources in impressive numbers, has found no constant difference between those from Guatemala and those from Africa, while as to lesions, the facts quoted above show that the production of ocular lesions does not, in fact, distinguish from one another the forms found in the two hemispheres. *Onchocera volvulus* is, then, the valid name for this parasite of man. What causes it to produce in certain parts of the world these devastating effects on the eye is unknown. Richard C. Strong[3] notes that in Guatemala, which place has given the worm its title of "blinding," only 5 per cent. of the infected suffered from ocular lesions. In the affected spots in the Sudan, however, the percentage of infected so suffering is clearly many times greater, and is showing a disquieting rate of increase. Accordingly the obligation on its Government to take active steps for the closer investigation and stronger control of this infection is of corresponding and pressing urgency.

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[1] Trans. Roy. Soc. Trop. Med. and Hyg., 19[illegible]

[2] Ann. Soc. belge de méd. trop., 19[illegible], xi[illegible]

THE LAURENCE-MOON-BIEDL SYNDROME

THE association of obesity, hypogenitalism, mental retardation, and polydactyly with retinal pigmentation may at first sight seem at least as improbable as the existence of Othello's men whose heads do grow beneath their shoulders. On embryological grounds it is hard to link the mesenchymal abnormality which results in the polydactyly and other skeletal defects with the retinal and diencephalic defects which are epiblastic in origin. The complete syndrome is, indeed, of extreme rarity, and in some of the family groups recorded is only seen spread through different members of the family. Cockayne, Krestin, and Sorsby[4] have reviewed the literature of this curious condition, adding two family groups to the 30 or so examples already published. Out of the first family group of ten, three (and possibly four) members were found to be affected, whilst of the second group of four members three were affected. In the first instance no one patient showed the full syndrome, although all the components of the syndrome were found between the three affected patients. In the second group the eye changes were those of cerebromacular disease. The authors discuss the possible relationship of the condition with juvenile amaurotic idiocy (Batten-Mayou disease), since certain characteristic eye changes may occur in both; but there are, as they point out, definite differences in the onset, course, neurological signs, and sex incidence, here being an excess of males affected with the urence-Moon-Biedl syndrome, whereas no such onderance exists in juvenile amaurotic idiocy. also conclude from the evidence available that Laurence-Moon-Biedl syndrome is inherited as autosomal recessive. In the complete sibships recorded, information as to the presence or absence of consanguinity of parents is given in 23 instances; of these, 6 were the result of first-cousin marriages and 3 of second-cousin marriages, whilst in the remainder there was no blood-relationship. Thus 43 per cent. were derived from first- or second-cousin marriages. There is no instance of the parents being affected with the syndrome. The authors also incline to the suggestion made by Rieger and Trauner[5]—and elsewhere independently by Cockayne[6]—that the epi- and mesoblastic elements of the syndrome are both recessive and due to mutations in two genes in the same chromosome.

MALARIA IN CEYLON

A RECRUDESCENCE of malaria has been reported this spring in those parts of Ceylon affected by the epidemic. The symptoms have been of a milder type generally, and cerebral cases and convulsions have been rare. No information is available at present to indicate whether there has been a fresh increase in mosquito-breeding, leading to reinfections, or whether these cases are simply relapses. That the recrudescence has not been maintained is shown by a reduction in the number of reported malaria deaths from 19,059 in March to 15,933 in April. The full history of the epidemic will be awaited with great interest; both from the epidemiological standpoint—which should provide Colonel J. G. Gill, with striking parallels and equally striking contrasts with his experience in the Punjab—and from the standpoint of treatment. The situation has afforded an opportunity for the clinical test of the latest remedies upon a grand scale, and the issues at stake, as between the growers of quinine on the one hand and the manufacturers of synthetic antimalarial drugs upon the other, are of immense importance. It is to be hoped that any conclusions reached upon these issues may rest on a truly scientific assessment of the evidence.

DENERVATION OF THE KIDNEY

RENAL sympathectomy, on which Mr. S. Harry Harris, of Sydney, opened a discussion at the urological section of the Royal Society of Medicine last week, has only recently attracted attention in this country. Mr. Harris has been carrying out denervation of the renal pedicle for over eight years and is in a position to speak of the limitations of the operation as well as of its uses. The condition in which he finds it act most favourably is one for which he has coined the somewhat awkward term "renal sympathetico-tonus." How this overaction of the sympathetic nerves of the kidney is brought about he does not know, but its results can now be described with accuracy. Mr. Harris divides them into three stages.[7] First, a phase of irritability when the patient complains of colicky pains and the pyelogram shows a state of systole, the pelvis and calyces being contracted and the renal papillæ flattened out by the increase of intrapelvic pressure. Hæmaturia, which is a not infrequent complication of this phase, probably results from congestion caused by the contraction of the intrinsic muscles of the kidney. The second stage is one of exhaustion or diastole. Instead of occasional attacks of colic, the patient has a dull aching in the loin, increasing occasionally to a sharper pain. Pyelography shows the renal pelvis and calyces in a state of diastole. The third or final stage may be described as retention with overflow; Harris compares it to Hirschsprung's disease of the large bowel. In all three stages the injection of eserine has a favourable effect, relieving the spasm of the first and—provided there is no organic obstruction—provoking the dilated pelvis to empty itself in the later stages. After describing the technique of denervation of the pedicle, he deprecated the indiscriminate use of the operation. Subsequent speakers in the discussion endorsed this risk; Mr.

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[3] [illegible] with special reference to the American form of [illegible] from Dept. of Trop. Med. and Ins [illegible] Harvard Univ.), No. 6. London: Oxford University Press, 1934. Reviewed in THE LANCET, March 23rd, 1935, p. 689.

[4] Cockayne, E. A., Krestin, D., and Sorsby, A., Quart. Jour. Med., April, 1935, p. 93.

[5] Rieger H., and Trauner, R., Zeits. f. Augenheilk., 1929, [illegible]ii., 235.

[6] Inherited Abnormalities of the Skin and its Appendages, London, 1933, p. 40.

[7] Harris, S. H.: Renal Sympathectomy and Renal Sympathetico-tonus, THE LANCET, Feb. 23rd, 1935, p. 424.

Hugh Lett foresaw a danger of denervation being used for the innumerable cases of backache of doubtful origin seen in out-patient departments. Mr. J. B. Oldham, of Liverpool, confirming Mr. Harris's findings in general, mentioned other conditions in which theoretically sympathectomy might be serviceable. The renal pedicle, he said, contained three types of nerves, those running to the blood-vessels, those supplying the musculature, and sensory nerves. Since the majority of the nerves terminating in the vessels were vasoconstrictor, division would bring about a condition of vasodilatation. It was therefore logical to employ renal sympathectomy in reflex anuria, and after pyelo-nephro-lithotomy in order to increase diuresis and diminish the risk of a recurrence of stone. As, however, he had found that diuresis was preceded by a period of reduced secretion, he no longer considered sympathectomy appropriate in the treatment of reflex anuria. If, as Mr. Harris suggested, hæmaturia might be a result of contraction of the intrinsic musculature of the kidney, denervation was a possible treatment for that mysterious condition, essential hæmaturia. He agreed with Mr. Harris that the operation should cause no ill-effects, although in three cases in which he had attacked the pedicle by the abdominal route acute dilatation of the stomach had followed. In the near neighbourhood of the renal pedicle were sympathetic fibres running to other viscera; it must be remembered that both the diseases and the results of the operation might not be limited to the kidney itself. Exaggeration of the knee-jerks might, he thought, be a useful sign in diagnosis. The consensus of those taking part in the discussion was that denervation of the renal pedicle in appropriate cases was a valuable asset to surgery. Animal experiment and human experience both showed that the kidney suffered in no way from being deprived of its nerve-supply. The functional complications to which some writers have drawn attention are evidently considered rare. Indeed we have heard of their being likened to the Russians who came through England at the beginning of the late war; everyone, it was suggested, had heard of them but very few had seen them.

NEW JOURNALS OF ANÆSTHETICS

WITHIN the last few weeks two new periodicals wholly devoted to anæsthetics have made their appearance on the continent, one in Italy and the other in France. Their production is evidence of the importance now attached in those countries to studies which until recent years were pursued in English-speaking countries almost exclusively. Germany has for some time had her *Schmerz Narkose-Anæsthesie*, but there, as elsewhere in Europe, local anæsthetics were so largely preferred to general that the study of anæsthesia as a whole, and the education of specialists, were behind what had been done in Great Britain, Australia, Canada, and the United States. The situation is now rapidly changing. Although it will probably be a good while before there are on the continent many practitioners devoting themselves entirely to anæsthetics, there are already a number who, though mainly surgeons or physicians, have undertaken research in connexion with, or have seriously practised that branch of medicine. The result has been in France the formation of a French "Society of anæsthesia and analgesia" whose official organ is one of the new journals referred to above. The first issue of *Anesthésie et Analgésie* contains a paper by the editor, Dr. R. Monod, on the aims of the society and the means by which it hopes to attain them, while Prof. E. Desmarest contributes a capital review of the present state of opinion and practice regarding anæsthetics. There is also a full account of the articles of the society and of its first session. Three original communications and a good recent bibliography complete an issue which sets a high standard.

RHEUMATISM UNDER REVIEW

INCREASING interest in the health of the industrial worker has meant increasing—though inadequate—attention to the rheumatic diseases which impair his efficiency. In the United States the American Association for the Study and Control of Rheumatic Diseases arranges conferences as a meeting-place for all medical men concerned in the study of arthritis, and the proceedings of its first annual congress, held at Cleveland last summer, have been reported at length.[1] In his presidential address Dr. Ernest E. Irons, of Chicago, rightly pointed out that the magnitude of the suffering and disability caused by arthritis offers a challenge to the medical profession and the public. Chronic arthritis is to be thought of as a disease that affects the body as a whole rather than the joints alone, and every patient presents a special problem. A division of arthritis into two clinical groups, atrophic and hypertrophic, is accepted as convenient, but the rôle of focal infection in their ætiology is variously assessed. Indeed, no clear opinion emerged from the congress as to whether the joint lesions are due to a bacteræmia, or are metastatic, toxic, or allergic. Dr. Arthur Steindler, in a careful study of 4339 patients, concluded that foci of infection were present in 17 per cent. of cases both of atrophic and hypertrophic varieties: these foci, in descending order of frequency, were in tonsils, teeth, accessory nasal sinuses, biliary system and genito-urinary tract. Removal of foci was followed by subsidence or decided improvement in a quarter to a third of the cases, but many relapsed, and when followed for a year only 8–15 per cent. of the patients were found to have gained real benefit. On the nature of the causative germs in these foci even greater divergence of opinions is found. It is commonly agreed that the streptococci are the predominant bacteria present, but very few workers accept a "Streptococcus rheumaticus" as probably responsible. The diversity of the members of the streptococcus group, their apparent ability to change in cultural characters, especially in their variable hæmolytic action upon blood corpuscles, makes experiment difficult. Further, there is lack of uniformity in the results of blood culture. A more suggestive finding is the presence of positive skin reactions to streptococci, and serum agglutinins for hæmolytic streptococci, in patients suffering from chronic atrophic arthritis. "I do feel," said Dr. C. W. Wainwright, "that the skin reaction is the most definite evidence of hypersensitiveness obtainable." When attempts are made to turn these results to practical use with injections of vaccines, it can only be said, however, that their value remains unproved.

A factor that has been emphasised more generally of late is the nutritional one. Rheumatic patients are often found to be taking a deficient diet; they favour sugars and sweets, refined cereals and white bread. Many workers accordingly ascribe the increasing incidence of rheumatic disease to a change not only in quantity but in quality of the foods usually taken, and emphasise especially an insufficiency of the vitamin B group.

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[1] Jour. Amer. Med. Assoc., 1934, ciii., 1732, 1801, 1883.

in Africa, and that he named the New World form *O. cæcutiens*. As to morphology, J. H. Sandground,[3] after examination of onchocerca worms from various sources in impressive numbers, has found no constant difference between those from Guatemala and those from Africa, while as to lesions, the facts quoted above show that the production of ocular lesions does not, in fact, distinguish from one another the forms found in the two hemispheres. *Onchocera volvulus* is, then, the valid name for this parasite of man. What causes it to produce in certain parts of the world these devastating effects on the eye is unknown. Richard C. Strong[3] notes that in Guatemala, which place has given the worm its title of "blinding," only 5 per cent. of the infected suffered from ocular lesions. In the affected spots in the Sudan, however, the percentage of infected so suffering is clearly many times greater, and is showing a disquieting rate of increase. Accordingly the obligation on its Government to take active steps for the closer investigation and stronger control of this infection is of corresponding and pressing urgency.

THE LAURENCE-MOON-BIEDL SYNDROME

THE association of obesity, hypogenitalism, mental retardation, and polydactyly with retinal pigmentation may at first sight seem at least as improbable as the existence of Othello's men whose heads do grow beneath their shoulders. On embryological grounds it is hard to link the mesenchymal abnormality which results in the polydactyly and other skeletal defects with the retinal and diencephalic defects which are epiblastic in origin. The complete syndrome is, indeed, of extreme rarity, and in some of the family groups recorded is only seen spread through different members of the family. Cockayne, Krestin, and Sorsby[4] have reviewed the literature of this curious condition, adding two family groups to the 30 or so examples already published. Out of the first family group of ten, three (and possibly four) members were found to be affected, whilst of the second group of four members three were affected. In the first instance no one patient showed the full syndrome, although all the components of the syndrome were found between the three affected patients. In the second group the eye changes were those of cerebromacular disease. The authors discuss the possible relationship of the condition with juvenile amaurotic idiocy (Batten-Mayou disease), since certain characteristic eye changes may occur in both; but there are, as they point out, definite differences in the onset, course, neurological signs, and sex incidence, here being an excess of males affected with the urence-Moon-Biedl syndrome, whereas no such onderance exists in juvenile amaurotic idiocy. also conclude from the evidence available that Laurence-Moon-Biedl syndrome is inherited as autosomal recessive. In the complete sibships recorded, information as to the presence or absence of consanguinity of parents is given in 23 instances; of these, 6 were the result of first-cousin marriages and 3 of second-cousin marriages, whilst in the remainder there was no blood-relationship. Thus 43 per cent. were derived from first- or second-cousin marriages. There is no instance of the parents being affected with the syndrome. The authors also incline to the suggestion made by Rieger and Trauner[5]—and elsewhere independently by Cockayne[6]—that the epi- and mesoblastic elements of the syndrome are both recessive and due to mutations in two genes in the same chromosome.

MALARIA IN CEYLON

A RECRUDESCENCE of malaria has been reported this spring in those parts of Ceylon affected by the epidemic. The symptoms have been of a milder type generally, and cerebral cases and convulsions have been rare. No information is available at present to indicate whether there has been a fresh increase in mosquito-breeding, leading to reinfections, or whether these cases are simply relapses. That the recrudescence has not been maintained is shown by a reduction in the number of reported malaria deaths from 19,059 in March to 15,933 in April. The full history of the epidemic will be awaited with great interest; both from the epidemiological standpoint—which should provide Colonel J. G. Gill, with striking parallels and equally striking contrasts with his experience in the Punjab—and from the standpoint of treatment. The situation has afforded an opportunity for the clinical test of the latest remedies upon a grand scale, and the issues at stake, as between the growers of quinine on the one hand and the manufacturers of synthetic antimalarial drugs upon the other, are of immense importance. It is to be hoped that any conclusions reached upon these issues may rest on a truly scientific assessment of the evidence.

DENERVATION OF THE KIDNEY

RENAL sympathectomy, on which Mr. S. Harry Harris, of Sydney, opened a discussion at the urological section of the Royal Society of Medicine last week, has only recently attracted attention in this country. Mr. Harris has been carrying out denervation of the renal pedicle for over eight years and is in a position to speak of the limitations of the operation as well as of its uses. The condition in which he finds it act most favourably is one for which he has coined the somewhat awkward term "renal sympathetico-tonus." How this overaction of the sympathetic nerves of the kidney is brought about he does not know, but its results can now be described with accuracy. Mr. Harris divides them into three stages.[7] First, a phase of irritability when the patient complains of colicky pains and the pyelogram shows a state of systole, the pelvis and calyces being contracted and the renal papillæ flattened out by the increase of intrapelvic pressure. Hæmaturia, which is a not infrequent complication of this phase, probably results from congestion caused by the contraction of the intrinsic muscles of the kidney. The second stage is one of exhaustion or diastole. Instead of occasional attacks of colic, the patient has a dull aching in the loin, increasing occasionally to a sharper pain. Pyelography shows the renal pelvis and calyces in a state of diastole. The third or final stage may be described as retention with overflow; Harris compares it to Hirschsprung's disease of the large bowel. In all three stages the injection of eserine has a favourable effect, relieving the spasm of the first and—provided there is no organic obstruction—provoking the dilated pelvis to empty itself in the later stages. After describing the technique of denervation of the pedicle, he deprecated the indiscriminate use of the operation. Subsequent speakers in the discussion endorsed this risk; Mr.

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[3] [illegible] reference to the American form [illegible] from Dept. of Trop. Med. and Harvard Univ.), No. 6. London: [illegible] 4. Reviewed in THE LANCET, [illegible]

[4] Cockayne, E. A., Krestin, D., and Sorsby, A., Quart. Jour. Med., April, 1935, p. 93.

[5] Rieger H., and Trauner, R., Zeits. f. Augenheilk., 1929, [illegible] 235.

[6] Inherited Abnormalities of the Skin and its Appendages, London, 1933, p. 40.

[7] Harris, S. H.: Renal Sympathectomy and Renal Sympathetico-tonus, THE LANCET, Feb. 23rd, 1935, p. 421.

Hugh Lett foresaw a danger of denervation being used for the innumerable cases of backache of doubtful origin seen in out-patient departments. Mr. J. B. Oldham, of Liverpool, confirming Mr. Harris's findings in general, mentioned other conditions in which theoretically sympathectomy might be serviceable. The renal pedicle, he said, contained three types of nerves, those running to the blood-vessels, those supplying the musculature, and sensory nerves. Since the majority of the nerves terminating in the vessels were vasoconstrictor, division would bring about a condition of vasodilatation. It was therefore logical to employ renal sympathectomy in reflex anuria, and after pyelo-nephro-lithotomy in order to increase diuresis and diminish the risk of a recurrence of stone. As, however, he had found that diuresis was preceded by a period of reduced secretion, he no longer considered sympathectomy appropriate in the treatment of reflex anuria. If, as Mr. Harris suggested, hæmaturia might be a result of contraction of the intrinsic musculature of the kidney, denervation was a possible treatment for that mysterious condition, essential hæmaturia. He agreed with Mr. Harris that the operation should cause no ill-effects, although in three cases in which he had attacked the pedicle by the abdominal route acute dilatation of the stomach had followed. In the near neighbourhood of the renal pedicle were sympathetic fibres running to other viscera; it must be remembered that both the diseases and the results of the operation might not be limited to the kidney itself. Exaggeration of the knee-jerks might, he thought, be a useful sign in diagnosis. The consensus of those taking part in the discussion was that denervation of the renal pedicle in appropriate cases was a valuable asset to surgery. Animal experiment and human experience both showed that the kidney suffered in no way from being deprived of its nerve-supply. The functional complications to which some writers have drawn attention are evidently considered rare. Indeed we have heard of their being likened to the Russians who came through England at the beginning of the late war; everyone, it was suggested, had heard of them but very few had seen them.

NEW JOURNALS OF ANÆSTHETICS

WITHIN the last few weeks two new periodicals wholly devoted to anæsthetics have made their appearance on the continent, one in Italy and the other in France. Their production is evidence of the importance now attached in those countries to studies which until recent years were pursued in English-speaking countries almost exclusively. Germany has for some time had her *Schmerz Narkose-Anæsthesie*, but there, as elsewhere in Europe, local anæsthetics were so largely preferred to general that the study of anæsthesia as a whole, and the education of specialists, were behind what had been done in Great Britain, Australia, Canada, and the United States. The situation is now rapidly changing. Although it will probably be a good while before there are on the continent many practitioners devoting themselves entirely to anæsthetics, there are already a number who, though mainly surgeons or physicians, have undertaken research in connexion with, or have seriously practised that branch of medicine. The result has been in France the formation of a French "Society of anæsthesia and analgesia" whose official organ is one of the new journals referred to above. The first issue of *Anesthésie et Analgésie* contains a paper by the editor, Dr. R. Monod, on the aims of the society and the means by which it hopes to attain them, while Prof. E. Desmarest contributes a capital review of the present state of opinion and practice regarding anæsthetics. There is also a full account of the articles of the society and of its first session. Three original communications and a good recent bibliography complete an issue which sets a high standard.

RHEUMATISM UNDER REVIEW

INCREASING interest in the health of the industrial worker has meant increasing—though inadequate—attention to the rheumatic diseases which impair his efficiency. In the United States the American Association for the Study and Control of Rheumatic Diseases arranges conferences as a meeting-place for all medical men concerned in the study of arthritis, and the proceedings of its first annual congress, held at Cleveland last summer, have been reported at length.[1] In his presidential address Dr. Ernest E. Irons, of Chicago, rightly pointed out that the magnitude of the suffering and disability caused by arthritis offers a challenge to the medical profession and the public. Chronic arthritis is to be thought of as a disease that affects the body as a whole rather than the joints alone, and every patient presents a special problem. A division of arthritis into two clinical groups, atrophic and hypertrophic, is accepted as convenient, but the rôle of focal infection in their ætiology is variously assessed. Indeed, no clear opinion emerged from the congress as to whether the joint lesions are due to a bacteræmia, or are metastatic, toxic, or allergic. Dr. Arthur Steindler, in a careful study of 4339 patients, concluded that foci of infection were present in 17 per cent. of cases both of atrophic and hypertrophic varieties: these foci, in descending order of frequency, were in tonsils, teeth, accessory nasal sinuses, biliary system and genito-urinary tract. Removal of foci was followed by subsidence or decided improvement in a quarter to a third of the cases, but many relapsed, and when followed for a year only 8–15 per cent. of the patients were found to have gained real benefit. On the nature of the causative germs in these foci even greater divergence of opinions is found. It is commonly agreed that the streptococci are the predominant bacteria present, but very few workers accept a "Streptococcus rheumaticus" as probably responsible. The diversity of the members of the streptococcus group, their apparent ability to change in cultural characters, especially in their variable hæmolytic action upon blood corpuscles, makes experiment difficult. Further, there is lack of uniformity in the results of blood culture. A more suggestive finding is the presence of positive skin reactions to streptococci, and serum agglutinins for hæmolytic streptococci, in patients suffering from chronic atrophic arthritis. "I do feel," said Dr. C. W. Wainwright, "that the skin reaction is the most definite evidence of hypersensitiveness obtainable." When attempts are made to turn these results to practical use with injections of vaccines, it can only be said, however, that their value remains unproved.

A factor that has been emphasised more generally of late is the nutritional one. Rheumatic patients are often found to be taking a deficient diet; they favour sugars and sweets, refined cereals and white bread. Many workers accordingly ascribe the increasing incidence of rheumatic disease to a change not only in quantity but in quality of the foods usually taken, and emphasise especially an insufficiency of the vitamin B group.

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[1] Jour. Amer. Med. Assoc., 1934, ciii., 1732, 1801, 1883.

Treatment, it was suggested, must take account of all these factors. The diet must be high in calories and rich in vitamins, with plenty of red meat, starches, fresh fruits and vegetables, and including yeast, wheat germ, and cod-liver oil. General measures of hygiene—rest, fresh air and sunlight—are important; and obviously infected foci should be removed. Sedatives may be needed to secure adequate sleep, and blood transfusion is often useful, especially before operations for removal of foci. The care of the joints themselves, it should be recognised, demands much more than a routine. The changes in them are due to the disease, to muscle spasm, and to inactivity in a position of deformity; hence rest and the avoidance of trauma, freedom from weight-bearing and some degree of immobilisation, with prevention of changes from disuse, are the indications, and they must be met by counterpoised motion and active exercises. It was pointed out that pain during exercise is of little or no significance provided it does not continue *after* exercise. Physical therapy, splints, specific exercise, and supports need thought and planning. Local heat and ionisation with choline derivatives are often helpful, while acetylsalicylic acid is a standby for pain. No mention was made in the debates of gold therapy as advocated by Forestier and others.

PNEUMOCOCCAL PERITONITIS

Candolin has lately made an elaborate study of 97 cases of pneumococcal peritonitis seen in Finland, and although his conclusions are not very novel the fact that they are reached from so large a series is in itself important. As has now been pointed out repeatedly, the disease is one especially of small girls. Candolin offers no explanation why this should be so: he is not at all impressed with the results obtained from examining vaginal smears; nor does he regard the vagina as a likely portal of entry for the pneumococcus. Of the cases in this series 64 per cent. were girls under ten years of age, and until the age of 30 females still showed a preponderance, after which there was a fairly even distribution between the sexes. Only a quarter of the patients were adults. The treatment given, in all but 11 cases, was operative, and as a rule the operation was done in the initial stage of diffuse, or non-localised, peritonitis. Such treatment is not what is usually accepted as the best, but the measures adopted are often determined rather by the difficulty of diagnosis than by the surgeon's preference for them. Weighing the pros and cons of early operation, Candolin thinks on the whole that delay in operating is rarely justifiable in adults, in whom the diagnosis must often be conjectural, to say the least. In children there may be more reason to suspect the disease, and the clinical picture may be definite enough to justify a differential diagnosis from appendicitis, which at this time of life is the only condition likely to cause confusion. In girls up to the age of ten pneumococcal peritonitis and appendicitis occur in the proportion of 1 : 3.

In pneumococcal peritonitis, Candolin finds, the onset tends to be suddener, and sometimes there is a history of previous catarrh. The patient's general condition is apt to seem worse than would be expected from the local signs in the abdomen. The white blood count is somewhere about 20,000, and a blood examination is helpful particularly in long-standing cases in which tuberculosis is suspected. Herpes and cyanosis, when present, are suggestive of pneumococcal peritonitis, and in about 70 per cent. of cases diarrhœa is a more or less conspicuous symptom. Unfortunately, however, in pelvic appendicitis too—and this is just the variety in which accurate diagnosis is liable to cause difficulty—diarrhœa is comparatively common. In pneumococcal peritonitis abdominal examination reveals a diffuse swelling, not at first obvious, which is doughy to feel and meteoric on percussion; usually there is no very definite resistance of the muscle wall, nor any localisation of signs and symptoms. Unfortunately, again, from the point of view of diagnosis, Candolin found that when one side was apparently more implicated than the other it was the right (30 per cent. of cases). A pronounced distension may be present from the start. Of complications those in the lung, and especially pneumonia, were fairly common, but Candolin seems to regard them as true complications, and not as part and parcel of a generalised pneumococcal septicæmia. Of his 97 cases 32 are noted as having some form of lung affection, 16 of these being pneumonia; and of the 16, there were only 4 with signs of pneumonia from the onset. Generalised septicæmia is reported in only 8 cases.

The mortality was rather higher in adults (16 out of 24, or 67 per cent.) than in children (40 out of 73, or 55 per cent.); of the 11 patients who had no operation, all but one died. Operation in the "diffuse" stage of the peritonitis showed a mortality of 62 per cent.; while of the cases left without operation at this stage (some eventually opened; some treated without operation) 46 per cent. died. In cases not treated by primary laparotomy and surviving this stage to develop an abscess which can be drained later the prognosis is of course comparatively good; thus those operated on in the stage of abscess-formation in Candolin's series had a mortality of 13 per cent. But, as he is at pains to emphasise, it is not fair to compare this figure directly (as has been done by some authors) with the figure for operation in the "diffuse" stage, since at the time of deciding whether or not to open the abdomen at the onset of illness one does not know whether the patient belongs to the group of possible survivors, or to the group who will die in the acute stage of the illness. As signs indicating a bad prognosis, he mentions a temperature above 40° C. (104° F.), a difference of more than 1·0° C. between the rectal and axillary temperatures, a pulse-rate above 130, albuminuria, absence of diarrhœa, intestinal paralysis, and the presence of a large number of bacteria in the exudate. Unilateral pneumonia did not seem to make the prognosis any worse.

DR. W. G. Savage, who has been elected to succeed Dr. Veitch Clark in October as president of the Society of Medical Officers of Health, has been county medical officer for Somerset since 1909. His name has long been associated with a national campaign for pure water, pure milk, and unadulterated food.

AN exhibition will be held at the Royal Society of Medicine, 1, Wimpole-street, London, on July 1st to 13th, of the works of members of the Medical Art Society, whose president is Sir Leonard Hill, and hon. secretary Prof. C. A. Pannett. Under the rules the works of art by members of the society, admissible to the exhibition, will be paintings, aquatints and mezzotints, drawings, etchings, and lithographs, statuary and plastic work in any medium, and carving. Illustrations of medical subjects will be included in the exhibition.

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[1] Candolin, Y.: Acta Chir. Scand., vol. lxxvi., 1935, Suppl. xxxiv.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LIV.—SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD

NEUROLOGICAL complications are present in at least 80 per cent. of all cases of pernicious anæmia (P.A.) when first examined. Occasionally the change is mental—varying in degree from irritability, altered temperament, and character, to the fully developed psychosis most commonly of the paranoid type; but the usual complication is subacute combined degeneration of the spinal cord (S.C.D.), heralded by *paræsthesiæ*—numbness, tingling, coldness—of the extremities and showing in the spinal cord evidence of diminished function of both the *posterior columns* —hypotonia with absent or diminished deep reflexes, impaired vibration, and positional sense in the limbs with resulting ataxia—and *lateral columns*—hypertonia with increased deep reflexes and extensor plantar responses. The physical signs vary, dependent on the relative intensity of involvement of the posterior and lateral columns.

Before 1926 S.C.D. was rightly regarded as an invariably progressive disease which proved fatal in two to three years. We are now able with efficient liver therapy not only to restore rapidly the blood picture in pernicious anæmia to normal but also to maintain it with continued adequate treatment at a normal level. Has this advance enabled us to modify our outlook in the neurological complications of pernicious anæmia?

GENERAL CONSIDERATIONS

The symptoms and signs of S.C.D. may result from lesions in (1) the spinal cord, and/or (2) the peripheral nerves, which play a rôle probably greater then we have hitherto recognised. Disturbance of the functions of these structures in P.A. can result from (1) the anæmia itself, with resulting defective nutrition of nerve elements; (2) neuronic disintegration due to either a toxic agent or the absence of some specific factor necessary for neural nutrition; and (3) areas of softening which result from small hæmorrhages or thromboses. Any of these pathological disturbances in the peripheral nerves is potentially curable—i.e., given time and adequate therapy restoration of function will occur. But in the spinal cord any of these pathological factors may leave irreparable damage. No regeneration occurs in the central nervous system; hence only those symptoms resulting from temporary loss of function in the affected area of the cord due to the first and second factors detailed above are potentially curable. That this second factor exists is evident from those cases in which S.C.D. precedes the development of anæmia. The evidence available does not suggest that it is identical with the P.A. factors or with any of the known vitamins. On general grounds, therefore, the maximum therapeutic response which we can hope to achieve is to remove those symptoms resulting from peripheral nerve lesions and from temporary loss of cord function due to the factors above discussed.

But the clinical position is complicated by two facts: (1) the same physical signs result whether loss of nerve function is temporary or permanent; (2) it is difficult to differentiate clinically between certain posterior column and peripheral nerve defects of function, for paræsthesiæ, hypotonia, absent deep reflexes, and various sensory disturbances with ataxia are common to both. Hence in any given case of S.C.D. seen for the first time it would appear impossible to foretell with accuracy the results of treatment. Certain facts, however, do emerge from observations of patients suffering from P.A. and S.C.D. who are kept under continued adequate treatment (and no treatment which permits the red blood-cells to fall below 5,000,000 can be regarded as adequate):—

A. In over 50 per cent. of all cases treatment is followed by marked subjective improvement—the paræsthesiæ disappear, the gait becomes steadier, and the patient stronger; in only a small percentage of cases (under 5 per cent.) is there definite objective improvement, as evidenced by the restoration of a normal flexor plantar response which was previously extensor or diminution in the area of vibration loss. In this connexion it is important to avoid that optimism which results from inaccurate interpretation of altered physical signs, for the deep reflexes may revert to what appears to be a more normal type by extension of the cord lesion—e.g., the diminished knee-jerk of a patient in whom the degeneration is advancing in the lateral columns may become brisker.

B. If symptoms of S.C.D. are absent in an established case of pernicious anæmia they rarely develop if the patient is kept under adequate liver therapy—i.e., the prophylactic value of adequate anti-anæmic treatment against the development of S.C.D. is established. On the other hand, the development of S.C.D. is from clinical observation an almost inevitable consequence of inadequate treatment of P.A.

C. The presence of sepsis—urinary, pulmonary, or skin infections—not only retards the return of the blood picture to normal in P.A., it tends to accelerate the rate of progress of S.C.D.

RATIONALE OF TREATMENT

As in many other nervous diseases, so in S.C.D. the permanent loss of function resulting from the disease may be partially compensated by re-education —e.g., Fraenkel exercises or orthopædic measures: the temporarily impaired nutrition of muscle and nerve is improved by physiotherapy; but the essential treatment must clearly aim at overcoming the causative factors. From the general considerations above outlined, particularly the absence of more detailed knowledge of the second factor (and it cannot be held that the advocates of iron and vitamin-deficiency theories have established their claims), the only factor which lends itself to treatment is the associated *anæmia*; but that this is of overwhelming importance is shown by the infrequency with which symptoms of S.C.D. develop with a normal blood picture.

The detailed treatment of P.A. by various forms of liver and stomach extract, &c., has been the subject of many papers to which reference can be made. It may be summarised by emphasising that intramuscular injections of liver extract combine the maximum efficiency with the minimum expense in restoring the blood picture to normal. Any active preparation—e.g., Campolon (Bayer), Hepastab (Boots), Hepatex I.-M. (Evans)—can be used. As a rule 4–6 c.cm. are injected daily for four to seven days, and then on alternate days until the blood picture is restored to normal. The maintenance dose—i.e., that which keeps the red blood-cells at over 5,000,000 per c.mm.—is then established; this varies with the individual, but averages 2–4 c.cm. every two to six weeks. Stomach preparations are preferable to liver extracts if oral therapy is desired.

CONCLUSIONS

1. When a patient with S.C.D. is first seen the combination of (*a*) profound anæmia with (*b*) marked subjective symptomatology is of favourable prognostic import. In these, treatment is likely rapidly to improve both the blood picture and the nervous symptoms. Young patients tend on the whole to respond better than old. Unfavourable signs are: (*a*) marked objective disturbance as evidenced by lateral column changes, with (*b*) a relatively slight anæmia; and (*c*) sepsis.

2. If the symptoms of S.C.D. improve pari passu with the blood picture in P.A. the prognosis is good, for, with the maintenance of a satisfactory blood picture, the development of nervous symptoms is in the vast majority of cases indefinitely retarded. It is well here to emphasise that the maximum improvement in the nerve symptoms may not occur for 9–12 months, although the blood picture is much more rapidly restored to normal, a fact easily appreciated when one remembers that peripheral nerve regeneration may be a necessary preliminary to recovery.

3. A patient with P.A. in whom S.C.D. has not developed is adequately protected against this complication by efficient treatment of the anæmia.

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SPECIAL ARTICLES

THE STEWARDSHIP OF MENTAL HEALTH *

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DISEASE of the mind is a conception nearly as old as thought and language. But the health of the mind has been taken for granted until recent years. Psychiatry is a much older word than the phrase "mental health." And this is significant. We begin to talk and write about a concept only when we find that we cannot assume its permanence. Centuries ago men talked of "ministering to a mind diseased:" to-day we ask "Who is responsible for keeping a mind in health?" To-day there seems to be an increased interest in bodily fitness with more stress on individual responsibility. Alongside of this tendency, public opinion is accepting the idea that the community has a responsibility for conditions favouring health; witness the clearance of slums and the provision of playing fields. If the maintenance of physical health were universally regarded as the basic wealth of the community, we might reach a clearer understanding of how far society and how far the individual are respectively responsible for it.

If this difficulty exists in matters of bodily welfare, it is greatly intensified in the more subtle and complicated problem of mental health. The familiar tag about "Mens sana in corpore sano" is charged with fallacious reassurance. Some may keep the body fit and yet become insane; while others maintain astonishing mental vigour despite gross neglect of physical health. The problem is indeed subtle and complicated, and it is so partly because we hold very varied views about mental health. Let us approach it first from the community point of view. We might describe a healthy community as one in which the mental hospitals were nearly empty; the mental defectives reduced to zero; crime enormously reduced; suicides very rare. That is frankly Utopian, but if succeeding generations keep steadily in view this fourfold objective, progress will at least be more rapid than it is at present. Indeed, as far as the first and the last criteria are concerned, we are, at the moment, actually losing ground.

Attempts at Definition

If I were asked to define mental health I would confess myself defeated, but I am prepared to describe what the term conveys to me. I would describe the healthy minded man as one who combines personal harmony with social effectiveness in the following ways:—

1. He must have the will to live.
2. He must be able to enjoy all normal biological functioning.
3. He must have enough feeling of self-mastery to maintain adequate independence of circumstance and environment.
4. He must be ready to face conflict, internal or external, with a minimal recourse to evasion; or, in other words, he must be able to maintain subjective harmony with the least possible objective distraction.
5. He must have a scale of values whereby experiences and memories that have purpose and significance are preferred to those that lack them.
6. His social effectiveness must be characterised:—
    (*a*) By a reasonable confidence in his fellow-men.
    (*b*) By a broad toleration of human idiosyncrasies.
    (*c*) By that sense of social responsibility which only manifests itself in those who recognise in social contribution a prerogative rather than a duty.

It is clear that there can be no mental health where there is no will to live. The ability to enjoy normal biological functioning is also an obvious criterion of mental welfare; it matters not whether we are considering the girl with anorexia hysterica or the homosexual man. No one is mentally fit who lacks a reasonable degree of self-mastery. The young man who cannot face the simplest social gathering, and the woman who cannot bring herself to travel by underground, are cases in point. I have said that the healthy minded man must face conflict with a minimal recourse to evasion. This involves all tedium, frustration, insecurity, and vicissitude from which men try to escape by active distraction or passive anæsthesia. It comprises the youth who gambles because he is bored, the woman who drinks to forget her sexual conflict, the girl who develops asthma when she is jilted, and the man who takes to morphia when the share market goes against him.

Furthermore, to be healthy minded. one must have enough religion or philosophy to provide a scale of values in the unlimited alternatives of life. Man can only find permanent contentment by living on a plane that is in some degree higher than that of the instinct-driven animal. Unless his choice is inspired by some purpose other than immediate gratification, he must ultimately sink to the level of the creature whose well-being is entirely conditioned by his environment. It would be vain to suppose that this is not a very usual destiny. Every doctor of experience would agree that an appreciable proportion of his most disheartening cases are people who have no object in life, whose experiences are sterile, whose memories have no significance, whose condition can only be improved by a transitory stimulus from without. Some, no doubt, suffer from a degree of mental defect, but many have sufficient intelligence if they would but apprehend the transforming effect on life of a purpose that emanates from permanent values.

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* Being extracts from an address delivered at the annual general meeting of the Scottish Association for Mental Welfare at Glasgow on May 17th, 1935.

In his social adjustment the healthy minded man must feel a reasonable degree of confidence in his fellow-men. For every fully developed case of paranoia in our mental hospitals, there must be hundreds, if not thousands, who suffer from minor degrees of suspicion and mistrust; whose lives are blighted by this barrier to human harmony; and who poison the springs of social life for the community. Mental health also demands toleration. If we recall the familiar inferiority complex it is clear that many cases are partly, if not entirely, attributable to impatience and disparagement manifested chiefly by the adult towards the child. Above all, no one can be regarded as healthy minded who fails to accept his herd-status as one of reciprocal obligation. This adjustment of the individual to society has further implications. It should be an active participation in herd life. Neither a passive nor a compulsory participation fulfils the requirements. I would suggest that compassion, construction, or creation must enter into the relationship. The first is no doubt a derivative of the maternal instinct; the second sublimates masculine aggressiveness; the third is the expression of femininity.

The Question of Responsibility

If mental health is as complex as I suggest, how are we to attribute responsibility for its promotion and maintenance. Clearly we must begin with genetics. No community can raise its level of health, physical or mental, unless it breeds for health. This is axiomatic. Apart from sterilisation, which I am prepared to believe is of little ultimate importance, there is the much broader problem of certificates of fitness for marriage. This at once throws into relief the deplorable inadequacy of our knowledge; and when we realise how uncertain would be the voice of society in this matter, we must exercise tolerance towards the individuals who appear to us to procreate when they should refrain. Furthermore, it is to be remembered that the whole subject of transmissibility is pervaded with camouflage. Our genetic scientists are groping in a sphere where everyone has a vested interest to camouflage facts. The eugenic ideal is, on the surface, easy to promote, with all but the least educable of the community. But it is far from easy to secure that readiness to face reality, without which the data of genetics are subject to perpetual distortion. Therefore the responsibility for the dysgenic factor in the mental health of any community must be borne by the community at large, as well as by its scientific and professional advisers. The only exception is constituted by those individuals who are clearly ineducable in the matter of social responsibility, and for these society should accept the duty of rendering procreation impossible.

After genetics, we may consider the biogenic disturbances. This is a very wide group. It includes the exogenous poisons of which alcohol is still the chief representative. It comprises all the focal and systemic poisons from quinsy to syphilis. It covers all forms of organic deterioration, and most important of all, disequilibrium of the endocrine system, such as hypothyroidism.

The third and last group of mental disorders is the psychogenic. In many ways this is the most important. It must be borne in mind that these three groups can, and frequently do, overlap. Thus you may have a young man who is the victim of inherited defect, who suffers from a chronic sinusitis, and who develops well-marked neurasthenic symptoms on account of an unsympathetic foreman. The psychogenic disturbances of mental health are, in evolutionary precedence, the most recent. The genetic factor was clearly the earliest, being one that we share with animals. The biogenic we share with primitive man, but the psychogenic is the doubtful glory of civilised man. Civilisation implies an ever-increasing range of choice. Where primitive man has few alternatives and invariably makes his choice on grounds of immediate satisfaction, civilised man is incessantly faced with alternatives. He is called upon to exercise fine discrimination. If he is merely an instinct-driven animal he will sooner or later succumb to uncertainty. If, on the other hand, he is possessed of clear-cut values, he will discriminate with relative ease and maintain a consistent purpose in life. Man has to make his choice in the wide field of conceptual ideation that he derives from his cortical development, and in the equally wide field of material possibilities which he owes to his conquest of nature. Thus all extension of knowledge and all expansion of material development increase the pressure on his capacity of discrimination. In this development, civilisation presents two outstanding difficulties, machinery and monogamy. To each of these there has been, in recent years, one big-scale resistance.

Mechanisation and Monogamy

In so far as Mahatma Ghandi can be said to represent Swaraj, Indian nationalism has pitted itself against the mechanisation that characterises western civilisation. It is easy enough to recognise, if not to sympathise with, the object. Ghandi sees in western mechanisation a process that saps the citizen of individuality; that robs him of constructive or creative achievement; that renders him dependent on the machine and its owners; that concentrates on a few individuals the responsibility for intelligent thought and action. Ghandi sees the doubtful benefits to western man of a mechanised civilisation. His argument is that oriental man will be overcome by mechanisation once he accepts and admits it. So Ghandi very consistently does his bit of weaving every day. Sometimes he consistently travels on foot: at other times he inconsistently goes by train. Very inconsistently he reads and writes by means of lenses in a celluloid frame that Indian culture could never provide. Most inconsistently but most wisely he elected that his appendicitis should be treated by western surgery and western asepsis, rather than by the methods of the East. And the moral of this is that however injurious mechanisation may be to the mental health of man, it is a factor in reality to which man must adjust. That he has so far failed to adjust to it is probably admitted by all of us.

A strangely contrasted picture is presented to us by Soviet Russia. Its rulers are imposing mechanisation on a simple people with such enterprise and determination as command the wonder of the world. At the same time and by the same uncompromising methods, they have reduced monogamy to little more than a farce. By so doing they claim to have greatly limited the incidence of neuroses, and this claim it is not difficult to accept. But monogamy, more than all social phenomena, is to be judged, not by its influence on the mental health of the present generation, but by its effect on the character development of the next generation. It is open to us to anticipate that in another ten years, Russia may be faced with the problem of the antisocial or neurotic adult who was an unwanted or unprotected

Dr. H. Crichton-Miller in his address on the Stewardship of Mental Health said that the responsibility of doctors for mental health was small compared with that of teachers and clergy. Nevertheless they were expected to minister to the mind diseased, and no one who faced facts could feel that they had fulfilled this obligation creditably. [Full extracts from Dr. Crichton-Miller's address appear on page 1292.]

IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL ATTENDANCE ON THE CIVIC GUARD

FOR some time past there has been considerable discontent in the profession as to the conditions on which medical attendance is provided for the members of the Civic Guard, the police force of the Irish Free State. For some six or seven years after the force was organised medical attendants were appointed by the Chief Commissioners on similar conditions to those which existed in the time of the previous force—the Royal Irish Constabulary. In the ordinary course the post was offered to the dispensary doctor of the district in which a country station was situated, and the remuneration was on a capitation basis at the rate of two shillings per man per month. Some five or six years ago this system was changed. All medical men in the neighbourhood of the station where a vacancy for a medical attendant occurs are invited to apply for the post, stating their terms per visit. It is commonly believed that the applicant who is contented with the lowest fees is appointed, but this is denied by the authorities of the Guard, who state that other considerations are also weighed, such as proximity of residence and the wishes of the local members of the force. It is claimed that a considerable saving has been effected by the change of methods of appointment and of remuneration. On the other hand it is pointed out that this economy has been effected at the expense of health of the men of the force. When the medical attendant was paid on a capitation basis it was both his duty and his interest to exercise a general supervision over the station as regarded its sanitary condition and to pay attention to any matter which might injuriously affect the health of the men. At present he has no duty except to attend and give treatment to a sick man and he has no preventive or supervising duties. The claim that proximity of residence is given consideration by the authorities in making an appointment is not likely to be accepted, for in many cases medical men living ten, fifteen, or more miles away have been selected, to the exclusion of those living close to the station and in active practice in its immediate neighbourhood. In another respect also the medical care given to the Civic Guard has been criticised. The authorities give "general practitioner" treatment and nothing more except to a guard who is injured in the course of his duty. If a guard requires hospital treatment or special treatment of any kind he has to provide it at his own expense, or receive it as a charity patient in a hospital. It is true that the Government has made a substantial contribution to form the nucleus of a medical aid fund, but it repudiates any further responsibility. It would appear that it would be to the interest of the health of the men of the force if the Government were to take full responsibility for the care of their health as it does for that of men serving in the Army. The Civic Guard, like the Army, is a national force for the whole country under the control of the Government.

MEDICINE AND THE LAW

Claims against Deceased Practitioners

IT is often hard enough for a medical practitioner in his lifetime to repel a claim for damages founded on allegations of negligence in some instances scarcely remembered in the course of a busy practice. It will be harder still for his estate to repel such claims after his death when the chief witness for the defence cannot be called. The two principal medical defence societies, as their members are or will presently be informed, are taking steps to enlarge the scope of their protective activity so as to give the benefit of their help and advice to the executors and administrators of deceased members. The recent change in the law has been mentioned from time to time in these columns. Until last year there was a curious maxim, peculiar to the English common law and unknown in Scotland, to the effect that a personal action dies with the person. The maxim was mitigated by several complicated exceptions inserted by Parliament or by the law courts. Thus the Fatal Accidents Act of 1846 (better known as Lord Campbell's Act) enabled certain specified relations of a deceased person to claim certain limited kinds of damages against anyone whose negligence had caused the death. But it remained substantially true that the victims of a defendant's negligence might lose their remedy if the defendant died; their personal action would die with him. Last year the Law Reform (Miscellaneous Provisions) Act made an important change. Henceforth, when anyone dies, the causes of action subsisting against him or vested in him are to survive against his estate or for the benefit of his estate as the case may be. In other words it is now the law that an action for negligence against a surgeon or physician will not come to an end if the defendant dies. The executors of the surgeon or physician will have to fight the action at every conceivable disadvantage, since the man who best knew what had happened on the occasion of the alleged negligence will not be there to explain. Curiously enough, Parliament admitted that in certain cases this absence of the principal witness for the defence would work intolerable hardship. The Act is expressly excluded in claims for defamation and seduction, and in certain other circumstances, where the defendant is dead. Yet in allegations of professional negligence the death of the defendant is to leave the plaintiff free to launch or continue claims which only the defendant's evidence could properly rebut. Almost the only concession which will assist a dead defendant's executors is the statutory condition that either such claims must have been pending at the date of the defendant's death or else the cause of action must have arisen within six months before the defendant's death and proceedings must have been initiated within six months of the date on which his personal representatives assumed their duties.

There has scarcely been time as yet to judge how the Act will work. Already the courts have had to examine some of the problems it creates. But enough has probably been now said to convince all practitioners that the consequences of the change are an added argument for membership of one of the professional defence societies. The practitioner can hardly hope to escape the threat of litigation in his lifetime. It is to be feared that the new Act will encourage speculative claims against his estate after his death. These are best met with the expert help of societies which give special study to such contingencies.

Injuries to Inmate of Public Assistance Institution

On May 19th the North Somerset coroner investigated the death of a patient at the Wells Mental Institution, following injuries (which included 13 broken ribs) apparently incurred at the Frome Institution during attempts to restrain him. The deceased, a rag-sorter named Rowlands, was said to have shown signs of mental instability on May 8th and was sent to Wincanton Institution. It was stated at the inquest that, as there were only female nurses at that institution, he was removed from the Wincanton to the Frome Institution on May 12th. According to the night attendant at the latter place, Rowlands was restless, violent, and noisy all night, and had frequently to be put back into bed. The witness was assisted by two patients named Turner and Grise. He denied that he or Turner knelt on Rowlands or that a door was banged on him or that any impatience or temper was shown. The master of the Frome Institution had not been informed that Rowlands required restraint. Rowlands was sent next day to Wells, where he died. The certificate on which he was admitted at Wells said he was noisy and uncontrollable and required three men to keep him in bed. He was found to be bruised on the legs, arms, and chest, and an autopsy showed seven ribs broken on the right side and six broken on the left. The medical superintendent at the Wells Institution said that considerable violence must have been applied and that the ribs might have been broken by a knee being placed on his chest. It was stated that neither Turner nor Grise was capable of giving evidence. The jury returned an open verdict attributing death to hæmorrhage due to injuries received during the night at Frome.

Under the Public Assistance Order the master of an institution is obliged to notify the coroner within 48 hours of the death of a lunatic or alleged lunatic and he must also furnish a copy of a certificate by the medical officer stating, amongst other details, the apparent cause of death and any unusual circumstances attending the death, with a description of all injuries known at death or subsequently discovered. Thus, had the death occurred at Frome, there would presumably not have been wanting that measure of adequate investigation which public opinion demands. Under Section 160 of the Poor Law Act the Minister of Health has a general power to hold such inquiries as he may consider necessary or desirable. As regards inquests, coroners are vigilant to investigate any death occurring in a public institution where patients are treated among strangers in the absence of their friends and relations. It by no means follows that severe injuries to a patient are due to brutal and mistaken methods on the part of the staff or of his fellow-inmates; but it is obviously essential that cases of this kind should be thoroughly sifted by some independent authority.

West End Hospital for Nervous Diseases.—The accounts of this hospital show a balance of £1302. The X ray equipment, which had been condemned, has been renewed and as a generous gift towards this was received from the Bernhard Baron trustees the department has been named the Bernhard Baron X ray department. The in-patient hospital in Regent's Park received 582 patients, and 37,329 attendances were made by out-patients in Welbeck-street.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. (D.). W. G. Finnie to *St. Angelo* for R.N. Hospital, Malta.

ROYAL NAVAL RESERVE

Proby. Surg. Sub-Lt. P. S. Luffman promoted to proby. Surg. Lt.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. (D.). D. MacGregor to *Drake* for R.N.B.

ARMY MEDICAL SERVICES

Colonel W. P. MacArthur, D.S.O., director-general of Army Medical Services at the War Office, has been selected for appointment as commandant of the Royal Army Medical College, and promotion to major-general, from Sept. 26th next, in succession to Major-General R. B. Ainsworth, D.S.O., who retires on that date.

Colonel J. W. L. Scott, D.S.O., will then succeed Colonel MacArthur as deputy director-general, and will in turn be succeeded as assistant director-general by Brevet Colonel F. Casement, D.S.O., assistant director of pathology and hygiene in the Western Command.

ROYAL ARMY MEDICAL CORPS

The undermentioned Lts. (on prob.) are secd. under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931: M. Kosloff, J. McN. Lockie, A. Gleave, J. L. Gordon, G. G. Robertson, A. M. Pugh, J. H. Taylor, D. Wright, and D. N. Keys.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt. J. N. Heales to be Capt.

TERRITORIAL ARMY

Maj. E. Scott, D.S.O., to be Lt.-Col.

Lt. L. J. Beynon, from 19th Lond. R., to be Capt.

A. T. Halton and I. R. Jones to be Lts.

Supernumerary for service with the O.T.C.—Lts. T. H. Wilson, A. C. Frazer, and C. L. Heanley to be Capts.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. G. M. Goodwille, from Active List, to be Capt.

ROYAL AIR FORCE

Group Capt. A. Grant to Headquarters, R.A.F., India, for duty as Principal Medical Officer, vice Wing Comdr. R. W. Ryan.

Wing Comdrs. W. G. L. Wambeek to Station Headquarters, Heliopolis, Egypt, for duty as Medical Officer; T. Montgomery, to Headquarters, Western Area, Andover, for duty as Principal Medical Officer, vice Wing Comdr. A. J. Brown, D.S.O.; P. T. Rutherford, O.B.E., to No. 6 Flying Training School, Netheravon, for duty as Medical Officer.

Wing Comdr. T. S. Rippon is placed on the retired list.

Wing Comdr. T. S. Rippon, whose retirement from the R.A.F. is now gazetted, took a considerable part in research work on the mental aptitude for aviation and the essential characteristics of successful and unsuccessful aviators. This was referred to in The Lancet of September, 1918, and largely influenced the official methods of selection for Commissions. He qualified in 1911 and was educated at Bristol and the London Hospital, and had just established practice in Canada when the war broke out. He saw considerable service abroad and has been president of the Central Medical Board, R.A.F.

Flight Lt. J. Magner to Marine Aircraft Experimental Establishment, Felixstowe.

Flying Officers posted to Medical Training Depôt, Halton, on May 7th, on appointment to Short Service Commissions: P. A. Cooper, L. E. A. Dearberg, R. C. H. Tripp, H. L. Willcox, A. R. C. Young; J. C. Blair to Station Headquarters, Amman.

Flying Offrs. promoted to rank of Flight Lt.: D. R. Crabb, V. D'Arcy Blackburn, H. Bannerman, and H. S. Barber.

RESERVE OF AIR FORCE OFFICERS

Flight Lt. R. J. I. Bell relinquishes his commission on completion of service.

INDIAN MEDICAL SERVICE

The appt. of Lt. (now Capt.) T. K. White is confirmed.

Lt.-Col. R. H. Lee retires.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

THE 141st session of the Council was opened on May 28th, when Sir NORMAN WALKER, the president, read to the Council a loyal address to the King on the completion of his Silver Jubilee. In offering cordial and respectful congratulations upon the occasion to His Majesty the address ran:—

> Throughout the twenty-five years which your loyal subjects now commemorate with thanksgiving, the profession of medicine has enjoyed the special countenance and encouragement of Your Majesty, with the gracious support of Her Majesty the Queen and other members of the royal family. We beg most humbly to be permitted to record our dutiful sense of obligation and indebtedness for the royal patronage thus bestowed, and our hope and belief that it has proved a source of profound benefit to the science and art of medicine as well as to the whole people themselves, not only throughout the Empire but among men of goodwill in every land. We gladly and proudly recognise that Your Majesty's reign has been signalised by remarkable advances in the healing art, which have brought relief to the suffering and the promotion of better conditions of life among all classes of the community. New discovery since 1910 has provided medicine and surgery with new means of healing for diabetes, for certain widespread forms of anæmia and malnutrition, for crippled and defective children, for the wounded soldier and the injured workman, and for the mending of the maimed and the prevention and defeat of disease. Advance has also taken place in the science of physiology, which gives good hope for the better and fuller life of the normal man. In a single generation the "expectation of life" for all men has been extended some seven or eight years. Above all, Your Majesty's reign has been made famous by the enormous extension of facilities for bringing the blessing of health and recovery from sickness to millions of your subjects who formerly lacked such assistance in their time of need: this great fact is demonstrated beyond doubt by the medical service made available during the war, by the progress of the child welfare and school medical services, by the health insurance of sixteen million persons, by the reform of the poor-law medical service, and by the enormous expansion of the voluntary and municipal hospitals. In all these popular and practical changes we recognise not only the will of Parliament but the sympathetic and upholding hand of the King.

The address, signed by the President, by Sir George Newman, and Mr. Herbert Eason as respectively senior and junior treasurers, and Mr. Michael Heseltine, the registrar, concluded by expressing thanksgiving for His Majesty's continued health and reign and an earnest desire that there might be granted to him and to the Queen "many more happy, peaceful years with ever-widening opportunities for the display of their beneficent influence and encouragement at home and abroad."

Sir Norman Walker then referred to the deaths which had occurred since the last session of two members, Prof. Arthur Thomson and Sir Leslie Mackenzie. He recalled the active part taken by Prof. Thomson in everything concerned with medical education and to the firm views which he held as to the importance in the educational scheme of a thorough knowledge of anatomy. Of Sir Leslie Mackenzie he said: "Education interested him in every connexion, and before he began his medical studies he had won as a graduate in arts the Ferguson scholarship in philosophy, the blue ribbon of the four Scottish universities." Philosophy ran through all his subsequent work and made him a valuable member both of the Education and Executive Committees of the Council. The president welcomed as his successor as Crown nominee for Scotland, Dr. John Ritchie, M.O.H. for Dumfries, and he reminded the Council that Dr. William Bruce, the first direct representative for Scotland, was medical officer of health for the County of Ross.

Sir Norman Walker went on to congratulate Sir Holburt Waring who was for nearly 12 years a treasurer of the Council upon receiving a baronetcy, and Sir Walter Langdon-Brown, representative of the University of Cambridge, upon his knighthood. He further extended congratulations to Prof. Stopford, the representative on the council of the Victoria University of Manchester, and also the university, on the appointment of Prof. Stopford as vice-chancellor.

The president continued: The Executive Committee at their meeting in February decided that it was right that your president should offer to give evidence before the Select Committee of the House of Lords to whom the Bill for the Registration and Regulation of Osteopaths stood referred. I took the opportunity to expound the merits of our British system of one Register for qualified medical practitioners, and am hopeful that the system which has worked, and worked well, for nearly 80 years will be maintained.

You have in your hands the report of the Curriculum Committee appointed last June. Sir Richard Quain said in his presidential address on Nov. 22nd, 1892: "It is now recognised, and it is my hope that it will be more and more recognised every year, that the Council is doing all in its power to secure the higher education of the profession and to elevate and maintain its character in all that is essential in connexion with the welfare of the public, within the lines marked down for us by Parliament. . . In some other countries these duties devolve on Government officials: happily here they are placed in our own hands, and I am confident that we shall not fail to prove worthy of the trust thus reposed in us." The Curriculum Committee have worked very diligently, and the report has been considered and reconsidered again and again. In its present form it represents the combined wisdom of its members. It is not for me to go into any details; these will be dealt with by the chairman, Dr. Tidy, but it is proper that I should indicate from the chair what seems the best method of dealing with the report.

Another of my predecessors has said that "education is the primary occupation of the Council, and time must be provided for its consideration." It is always difficult to construct a time-table for the Council's sessions, but we have provisionally earmarked Thursday or Friday forenoon for the purpose. It is suggested that the discussion should follow the lines of a second reading debate on a motion that the report be received by the Council and circulated to the licensing bodies with a request for their comments and criticisms. Coöperation between the General Council of Medical Education and Registration of the United Kingdom and the licensing bodies is the root principle of the British method of medical education, and it will be advantageous if communications can be received from the bodies in time to be dealt with at the November session.

The Medical Register had added to it in 1934 1664 names, a number exceeded, sometimes considerably, in the years 1921 to 1927 inclusive. There were 898 deaths, and the number removed from the Register for other reasons, the great majority under the provisions of Section 14 of the 1858 Act, was

61; the 1935 Register, which includes the Colonial and Foreign lists, therefore contains 57,496 names. The figures showing the number of students registered by the Council in 1934 are: in England 1094, a decrease of 37 as compared with the number in 1933; in Scotland 724, an increase of 25; in Ireland 532, an increase of 75. The total 2350, which thus shows an increase of 63 over the total for the previous year, has only twice been exceeded, in the years 1919 and 1920, when the totals were 3420 and 2531. I recall our past experience that when trade is bad, entries of medical students go up, and vice versa. There are schools which are conscious of the fact that their equipment and staff are being severely strained, and that they must consider limitation of entry. But there is a general feeling of hope in the air to-day, and perhaps the severe limitations under consideration in some places may not be necessary. There will not, I feel sure, be any tendency to lower the standard of entry even if numbers do go down a little.

A report will be presented to you by the Finance Committee which shows that for the first time since 1929 the expenditure of the general and branch councils for the last year exceeded their income. The deficit, which amounted in round figures to £650, was primarily attributable to the expenditure of over £1300 unavoidably incurred by the English branch council on account of three contested elections of direct representatives. I am hopeful that before the necessity for further expenditure of this nature again arises, amendments of Section 8 of the Medical Act, 1886, which will simplify and cheapen the procedure, will have been secured by legislation. As regards our financial position generally, I think I may so far anticipate the statement to be made by the treasurers as to say that on a broad view of the results of the last quinquennium, we may regard with composure the deficit for the year 1934 if we set against it the surpluses, amounting in all to over £3500, realised in the other four years of that period.

At the conclusion of his address a vote of thanks to the President was proposed by Mr. G. H. Edington, and seconded by Dr. H. G. Dain. Dr. John Ritchie, the new Crown nominee, was introduced by Mr. Ernest Miles. Sir Robert Bolam was re-elected chairman of business.

After deliberation in camera, the President announced that the name of Ernest Wardman Willbourne had been restored to the Register. The Council then proceeded to the consideration of penal cases.

PANEL AND CONTRACT PRACTICE

A Californian Health Insurance System

THE citizens of California have long been noted for their independence of outlook, receptivity to new ideas, and readiness to adapt themselves to the changing conditions of modern life. Hence it is not surprising that California seems likely to be the first State of the American Union to adopt compulsory health insurance, which, incredible as it may appear to medical men in this country, is regarded by many American doctors as a step towards a system of socialised medicine of the Russian type. A health insurance Bill has recently been introduced into the State legislature, and since it is supported by the California Medical Association it is expected to become law. The Bill is the outcome of an investigation into sickness costs recently completed by a committee of the legislature, which produced results believed by the investigators to be representative of the conditions throughout California. Some 20,000 families were studied, of which 15 per cent. had annual family incomes of less than $500, 39 per cent. less than $1000, and 51 per cent. less than $1200. The investigators found that large numbers of the poorer classes do not receive the medical care they need, and that much of the care that is received is given at the cost of the attending doctors; no less than 70 per cent. of the total amount due for medical services to families with annual incomes below $3000 is not recovered by the doctors giving the services.

This result is the more remarkable since California has suffered less than most States from the economic depression. The survey indicated also that in 1933 one-third of the California doctors were earning net professional incomes of less than $2000, one-half less than $3000, and three-fourths less than $5000. Such being the earnings of a large proportion of the medical profession in a community in which the cost of living is higher than in this country, it is not surprising that many doctors are supporting the health insurance Bill; for State health insurance, whatever its defects may be, eliminates, so far as the insured population is concerned, such deplorable features of medical practice as unpaid services, bad debts, and costs of collection. The system set up by the Bill is on a compulsory and contributory basis, both employers and employees paying their shares of the cost of the system. The contributions will vary with the wages earned; the employees will pay 3·5 per cent. of their wages and the employers 1·5 per cent. Medical and dental treatment will be provided for the insured persons and their dependants; and as additional benefits, home nursing and institutional convalescent care may be given. No provision is made for cash benefits. The system presents features that illustrate the latest tendencies in European health insurance: separation of medical services from cash benefits, free choice of doctor from among the doctors undertaking insurance services, extension of medical treatment to the dependants of insured persons, and participation of the medical profession in the administration of the system, which will be controlled centrally by a commission of five members, two of whom must be doctors and three laymen.

A novel feature of the system, which, so far as we are aware, has no counterpart elsewhere, is that a doctor undertaking insurance practice must obtain a licence, renewable annually, from the Commission, for which a fee of $5 is paid, and must execute a bond for a substantial sum to guarantee the due performance of his duties. The Commission is to be given very wide powers, apparently to render it as far as possible free from political pressure. The Bill if it becomes law will furnish an interesting and distinctively American contribution to the problem of providing care for the poorer sections of the community; and doubtless it will in its practical working do much to reassure those doctors in other States of the Union in whose minds compulsory health insurance is associated with the Red Flag.

Medical Benefit in Scotland

From the sixth annual report of the Department of Health for Scotland we learn that in the year 1934 some 1,900,000 persons in Scotland were insured—

roughly the same number as in the county of London—in the proportion of two-thirds males to one-third females, or about 54 per cent. of the total male and 26 per cent. of the total female population. Medical benefit for insured persons cost about £1,000,000, of which £170,000 was spent on drugs and appliances. There has been a decline in the extent to which approved societies have utilised the services of regional medical officers for examining insured persons whose continued incapacity for work is considered doubtful. The peak year was 1932; in 1933 there was a reduction of over 8000, and a further similar reduction brings the figure down to 44,870. Recently, except in 1933, the references in respect of men have been fewer than in respect of women, and the return to the normal in 1934 is accounted for by the reduction in the number of references being greater for men than for women. The proportion of cases in which the R.M.O. agreed with the medical practitioner that the insured person was incapable of work was higher—by fully 2 per cent.—in 1934 than in the previous year. Some of the part-time practitioners who examine insured persons are specialists in various branches of medicine. Special blood examinations, fractional test-meals, and urea-concentration tests are available for the R.M.O. in making his decision in difficult cases. An important part of his work, which deserves not to be overlooked, is to give advice in carrying out national health insurance duties. The year 1934 has seen a general improvement in the relationship of the regional medical staff with the insurance practitioner.

The Cost of Drugs

An insurance committee in Lancashire recently had under consideration a report on the cost of drugs per head of the insured population for nine county boroughs. It appeared that the cost last year in pence was: Oldham, 45·9; Blackburn, 44·8; Barrow, 43·6; Preston, 43·3; Bury, 39·4; Burnley, 38·4; Blackpool, 35·0; Rochdale, 34·34; and Bolton, 34·0. The cost per head in London for 1934 was 37·01. The curious fact that in Oldham the cost is a third more than in Bolton doubtless has some good cause which it would be profitable to discover. It may be recalled that Manchester recently looked into the causes of the high cost of supplying drugs and appliances in that area.

Friendly Guidance

The clerk of the London Insurance Committee has issued another of what he calls his "written chats." He opens with an apology that on this occasion the letter is not accompanied by a cheque, expresses his "not entirely unselfish" pleasure at the prospect of the early withdrawal of the economy cuts, and then proceeds as follows:—

> There is, however, another very real reason for my writing to you now. As you know, if an insured person on the list of another local practitioner wants to transfer to you, he must, if he is unable to obtain the consent of his own practitioner, write to me for the consent of the Committee to his transferring at the end of the quarter. This consent is given in the form of a red printed slip (A1) attached to the medical card. I know that many insured persons have a disinclination to signing their names, but Part A1 definitely provides for and therefore requires the *signature* of the insured person himself, although in the past we have not insisted upon it any more than we insist upon a signature in Parts "A," "B," "C" or "D" of the medical card. A number of cases have occurred recently, however, in which it has been alleged that the insured person had no desire to change his doctor, but that someone else had engineered the transaction without his knowledge. For your own sake then, will you please, in future, insist that if a person wants to transfer to your list he shall himself sign the Part A1. For my part, it will be my unpleasant duty to reject any transfer acceptances of this kind which are not properly completed by the applicant as well as by the doctor. No one dislikes red tape more than I do, but this particular piece has been forced upon me, and any inconvenience which would arise as a result of it can be prevented if you and your medical colleagues will coöperate by insisting that Part A1 (the red printed slip) and, if possible, medical cards as well, are properly completed before you send them here.

A reference to information attached to medical cards regarding the allocation of insured persons who fail to select an insurance practitioner is followed by a concise statement of what may and should be prescribed by insurance doctors, written from the positive point of view. This should once and for all prevent such inquiries as "Am I permitted to prescribe cod-liver oil for patients other than those suffering from tuberculosis?" or "May I order vaccines for insured persons?" which we understand have actually been received recently. The clerk gives a gentle reminder to any practitioners who may have been remiss in returning medical records, and in a postscript he relents to the extent of indicating that if the recipient is entitled to receive a cheque in connexion with the final settlement for 1934 he will find it enclosed with the letter.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 18TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1990; diphtheria, 1057; enteric fever, 17; acute pneumonia (primary or influenzal), 949; puerperal fever, 53; puerperal pyrexia, 96; cerebrospinal fever, 19; acute poliomyelitis, 9; acute polio-encephalitis, 1; encephalitis lethargica, 5; dysentery, 14; ophthalmia neonatorum, 84. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 24th was 3161, [illegible] Scarlet fever, 957; diphtheria, 1274; me[illegible] cough, 388; puerperal fever, 27 mothe[illegible] phalitis lethargica, 269; poliomyelitis, 3. At St. Margaret's *Hospital there were 19 babies (plus 9 mothers) with* ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 21 (0) from measles, 6 (0) from scarlet fever, 21 (4) from whooping-cough, 37 (3) from diphtheria, 30 (9) from diarrhœa and enteritis under two years, and 73 (5) from influenza. The figures in parentheses are those for London itself.

Diphtheria occasioned 5 deaths at Liverpool, 3 at Hull, 2 each at Leeds, Manchester, and Oldham. Six fatal cases of measles were reported from Wigan, 3 from Sunderland. *Deaths from* whooping-cough numbered 3 at *Middlesbrough and at* Stoke-on-Trent. Of the much diminished deaths [illegible] 6 were reported *from* Manchester, 5 from [illegible] Leeds, 3 each from Acton, Blackburn, [illegible] Birmingham.

The number of stillbirths notified during the week was 289 (corresponding to a rate of 40 per 1000 total births), including 51 in London.

WEST LONDON HOSPITAL.—The Silver Jubilee extensions to this hospital will be finished in a few months' time, when the institution will be equipped with up-to-date casualty, X ray (diagnostic), and pathological departments. About £20,000 is still required to cover the cost.

CORRESPONDENCE

STIMULANTS OF METABOLISM

To the Editor of THE LANCET

SIR,—In your last issue Prof. E. C. Dodds and Dr. J. D. Robertson comment on the statement by Sir William Willcox that dinitro-phenol and dinitro-o-cresol are poisons to the liver and kidney cells. I do not think that anyone has much experience of the post-mortem findings in humans poisoned by these drugs, but I performed the autopsy in one proved case of poisoning by dinitro-o-cresol and examined the liver microscopically in a second where "some slimming drug" had been taken. In both these women there was severe damage to the liver and in the first case to the kidney also. It is interesting that the fat in the liver shows a very high proportion of fatty acid so that it stains a bluish purple with nile blue sulphate. In the proved case, the cause of death was respiratory failure due to pressure on the medulla by the cerebellum in the foramen magnum owing to the severe œdema of the brain, the pressure cone being well marked. It is difficult to understand how this could be produced solely by over-stimulation of metabolism.

Donald Hunter (THE LANCET, 1933, ii., 995) recorded the results of treating over 500 fat women in the east end of London with diet alone. They lost an average of 20 lb. each in three months, and none complained of hunger during treatment. It would seem to a mere morbid anatomist that reduction of weight might be brought about more safely and cheaply by suitable diet than by the use of drugs which all admit may easily prove fatal if not administered with great care and controlled by frequent measurements of the basal metabolic rate, and whose sole indication would appear to be to allow self-indulgence without obesity. Has Prof. Dodds changed his opinions since he gave the opening address at the Middlesex Hospital medical school in 1933? (THE LANCET, 1933, ii., 1933).

I am, Sir, yours faithfully,
WILFRID D. NEWCOMB.

St. Mary's Hospital, W., May 24th.

To the Editor of THE LANCET

SIR,—I have read with interest Prof. Dodds and Dr. Robertson's letter referring to the use of dinitro-phenol and dinitro-o-cresol in the treatment of obesity. They state that "provided a careful watch is kept on the patient and the basal metabolic rate is measured frequently, there is no danger in their use." Can a careful watch be kept over obese patients who are reducing in their own homes? These constitute the vast majority of would-be-reducers. The physician is lucky if he sees them once a week. Moreover, the average doctor has not the means, nor the average patient the money, to pay for repeated B.M.R. tests. The penalty for failure to adjust the dosage correctly is a series of exceedingly uncomfortable symptoms, and graver effects have actually been recorded.

The writers of the letter "feel that the important point to be emphasised is that the real risk arises from indiscriminate use of the drug." Dinitro-o-cresol received a wide advertisement in March, 1934. Once a drug is on the market, often it jumps from the hands of the expert into the arms of the foolish. Its indiscriminate use cannot be prevented. This is particularly true of weight-reducing medicines in general, many stout people being willing to try any means of slimming which does not impose dietetic restriction.

The cure of obesity by correct dieting is safe and certain. Can the same be said after the administration of such drugs as dinitro-phenol and dinitro-o-cresol? Their action in raising a normal basal metabolism to an abnormal level may seem an ingenious way of increasing output over intake but it must be a highly unnatural one. The short-cut to slimness is usually fraught with perils. If, of course, all cases of obesity could be attached to a laboratory for repeated investigations, eliminating the untoward happenings which may occur, I should not have written this letter. Until then, however, I agree with Sir William Willcox that their use should be avoided in clinical practice.

I am, Sir, yours faithfully,
W. F. CHRISTIE.

Lancaster Gate-terrace, Hyde Park, May 26th.

A CASE OF CANNABIS INDICA INTOXICATION

To the Editor of THE LANCET

SIR,—In the issue of THE LANCET dated April 6th, page 811, a clinical note under this title appeared, written by Dr. E. T. Baker-Bates, assistant honorary physician to the Royal Southern Hospital, Liverpool. The circumstances of the case made a popular appeal. In particular an article appeared in the *Liverpool Echo* with sensational cross-headings based upon the story as told in the columns of THE LANCET.

This patient was seen by me on Sept. 28th, 1933. She was admitted to the Stanley Hospital, Liverpool, at my request, and detained there for not more than 24 hours, where Dr. Baker-Bates was then on the staff. The original investigation of the case was conducted by me, and at first the police in Liverpool held the view that the plant, the smoking of whose leaves had caused the intoxication, was not cannabis indica but mugwort, and I was subjected to some "leg-pulling" by the police until an examination by Prof. Walter Dilling proved my diagnosis correct. I read a note at the time to the Liverpool Twenty Club on the case—this is a club of medical men which discusses papers on medical and lay subjects, and its proceedings are influential on things medical in Liverpool. Dr. Baker-Bates was present at the meeting as a guest. Six weeks ago I read the same note to the Wallasey Medical Society.

After the publication of the account of the case by Dr. Baker-Bates in THE LANCET of April 6th, 1935, and the long comment on it in the *Liverpool Echo,* I received the following letter from the chief constable of the Liverpool City Police, Mr. A. K. Wilson: "I read the other evening in the *Liverpool Echo,* and subsequently in THE LANCET, an article purporting to emanate from Dr. E. T. Baker-Bates respecting a case of cannabis indica poisoning in Liverpool. As the only case the police of this city have on record is that of Miss ——, of ——, Liverpool, which occurred on Sept. 28th, 1933, and which you investigated, I should like to know if the reports in the *Liverpool Echo* and THE LANCET refer to your case, or whether another case has arisen which has not been brought to the notice of the police. I observe so striking a similarity between the article in THE LANCET and the article written in the *Police Journal* of July-September, 1934, by my assistant, Mr. H. Winstanley, that I am forced to the conclusion that the same case is referred to. I did not know that Dr. Baker-Bates took any part in your investigation, but perhaps you will let me know in your reply if he did so. With regard to the *Liverpool Echo* report, I think you will agree with me that it is definitely not in the public interest that a case of this nature should be reported in the popular press." The chief constable enclosed a copy of the article which appeared in the *Police Journal*, July-September, 1934, and the similarity of the facts as stated in that article with those given in the article in THE LANCET is striking.

In his communication to THE LANCET Dr. Baker-Bates made no mention of my connexion with the case further than that "she was taken to a doctor and the history explained; he recorded, &c."; nor has he ever applied to me for any information; but the symptoms which he mentions are stated in almost the same words as those which appear in Mr. Winstanley's article in the *Police Journal*.

I am placed in a peculiar position on which there has already been comment, for when the case actually occurred it created some sensation and there is no doubt that the Liverpool police, the members of the Twenty Club, the Wallasey Medical Society, and many members of the profession in Liverpool all understood that the case had originally come under my treatment. I wrote to Dr. Baker-Bates on April 10th last, sending him a copy of the letter from the chief constable of Liverpool and asking for the source from which he obtained the notes which his article in THE LANCET stated to be "recorded" by a doctor. He telephoned in reply, and was told that I preferred not to discuss the matter on the telephone. Since then I have heard nothing from Dr. Baker-Bates.

I am, Sir, yours faithfully,
W. A. J. FLEMING.

Wallasey, May 18th.

ADMINISTRATION OF CARBON TETRACHLORIDE FOR HOOKWORM

To the Editor of THE LANCET

SIR,—Having read from time to time of deaths caused by carbon tetrachloride, I have come to think that the method of administration may have some influence. I have treated many hundreds of cases of ankylostomiasis on various estates and give carbon tetrachloride to all the labour force as a routine measure every six months. Only in very exceptional cases, however (perhaps one in a thousand), has there been any complaint even of discomfort, when the man treated has complained that the medicine "made him feel a little drunk." In the great majority of cases there has been no apparent discomfort, and the patient has gone about his daily duty immediately after receiving his dose.

Adults receive Tetraform 3 c.cm. in ol. ricini 15 c.cm., or approximately tetraform ♏50 in castor oil ½ oz. The mixture has to be thoroughly shaken, for the tetraform is heavier than the oil. Occasionally, in cases of Europeans "who cannot take castor oil," Internol (paraffin. liquidum B.D.H.) is substituted for the castor oil; it seems equally effective and the taste of the mixture is even pleasant, one patient likening it to raspberry flavouring.

Thus diluted, carbon tetrachloride seems to have no ill-effect, so I am passing on the information to those who give it otherwise. No purgative is needed after its use, and this is an advantage for all concerned.

I am, Sir, yours faithfully,
A. S. TUXFORD, L.M.S., H.K.

Lahad Datu, North Borneo, Jan. 26th.

PSITTACOSIS AND VIRUS INFECTION

To the Editor of THE LANCET

SIR,—The observations on so-called psittacosis recorded in your last issue may be interpreted otherwise than in your leading article. From my work on infections in general I infer that this condition belongs to what I term "infections from within"—i.e., infections caused by the mutation forms of the *Bacillus coli communis* in the large intestine, some of which develop (the earliest to mutate) into coccoid, sub-coccoid, and ultra-microscopic forms at certain periods in man and animals alike. The development into sub-phases is determined by the resistance of the host, a phenomenon which results from the establishment of immunity. It so happens that the changes occurring in the bacterial flora in the excreta in man are paralleled by those which take place in seed-eating birds, particularly in those recently brought into captivity. In the winter 1929–1930 the *Bacillus fæcalis alkaligenes* was terminating a cycle, the result being its development into sub-phases, some of which were responsible for one of the forms of influenza prevalent at that time. As the hosts had not had time to establish an immunity against these sub-phases, being newcomers, infections not only arose spontaneously in man and certain animals, but also they were intercommunicable. Recently the *Streptococcus fæcalis* has been undergoing a similar change, and the new cases of so-called "psittacosis" arising are being caused, both by the parent micro-organism and by the sub-forms into which the immunity of the hosts is making it develop.

As no infections occur naturally through the intraperitoneal route, it is not justifiable to draw inferences from what happens when this route is employed to cause an infection artificially; indeed, no reliance is to be placed upon experiments conducted on animals with micro-organisms which are pathogenic to man. Extracts of organs damaged by drugs and passed through filters may occasion manifestations of disease when injected intraperitoneally and intracerebrally, indistinguishable from those met with in infections; from which the inference may be drawn that all invaders, be they micro-organisms, physical agents, or chemical poisons, act fundamentally in the same way in producing disease.

The whole subject of disease wants overhauling, and no part of it more than the most recent one which deals with ultra-microscopic viruses. Because all of them are sub-phases of certain well-known bacilli and many when not formed naturally, may be readily generated by the actual process of filtration. If correlation were practised in place of differentiation, I am convinced so-called "psittacosis" would be found to be a form of influenza and not a specific infection. Influenza is always with us and filtrable viruses only play a part in its production when their parent bacilli are completing a cycle. And not all the bacilli responsible have reached the stage where they are capable of developing into sub-phases. The micro-organisms which have been extant sufficiently long to form sub-phases are Friedländer's bacillus, the *Bacillus fæcalis alkaligenes*, *B. proteus* X 19, and a certain streptothrix, and some of those formed by the last two have received the names of "rickettsia" and "pasteurellæ," respectively. Some of those formed by the *Bacillus fæcalis alkaligenes* have been classed amongst the pfeifferellæ and those formed by Friedländer's bacillus and its offspring the *Streptococcus fæcalis* have so far not been named, despite the fact that the infections caused by them are those best known. Many sub-phases are of e same nature as those which are called "toxines" hen liberated by the clostridia, thus explaining why ese micro-organisms do not form spores when they use disease. They cause disease only when the sistance of the host breaks them down, or subjects em to dehydration, whereas spore formation is an hibition of hydration.

I am, Sir, yours faithfully,

Wimpole-street, W., May 28th. J. E. R. McDONAGH.

ERGOMETRINE

To the Editor of THE LANCET

SIR,—It is unfortunately necessary to comment ery briefly on the letter by M. S. Karasch and . R. Legault, which you published under the heading Ergotocin" in THE LANCET of May 25th (p. 1243). or the guidance of those who might otherwise be isled, I wish simply to state that all the available vidence indicates that the substance isolated by arasch and Legault, to which they have transferred he trade name "ergotocin," is identical with the lkaloid ergometrine, which Moir and I originally escribed in the *British Medical Journal* of March 16th. oth my own subsequent preparations, in quantities ermitting adequate recrystallisation, and those of everal British manufacturers which I have examined, ossess all the properties mentioned by Karasch and egault, and the uncritical suggestion that "ergo-ocin" may be chemically different from ergometrine and clinically more potent may be dismissed without hesitation.

I am, Sir, yours faithfully,

H. W. DUDLEY.

National Institute for Medical Research, Hampstead N.W., May 25th.

TREATMENT OF SCABIES

To the Editor of THE LANCET

SIR,—Scabies occurs mostly in those seeking free hospital treatment where expense is a matter of importance. Sulphur ointment is cheap and is reasonably efficient, and will cure scabies in a few days. This is the justification for sulphur treatment in spite of the objections indicated by Dr. Fraser. In private practice more elegant and expensive preparations as Bayer's Mitigal (dimethyldiphenylene-disulphide) or benzylbenzoate (according to Haxthausen's prescription) are employed and are more efficient than sulphur. Pesticides such as those employed for destroying beetles are likely to be dangerous, since they may be absorbed and the whole skin of a patient suffering from scabies requires treatment, not only his hands and arms. Not sufficient is known of the possible toxic effects of carboxide, ortho-dichlorbenzene, and such pesticides to allow of their being used on human skins, but Dr. Fraser's letter suggests a useful line of research.

I am, Sir, yours faithfully,

Leeds, May 25th. JOHN T. INGRAM.

OBITUARY

THOMAS CUNNINGHAM PENFOLD, M.B., C.M. Edin.

THE death occurred in a Newcastle nursing-home on May 13th of Dr. Thomas Cunningham Penfold, medical officer of health to the Chester-le-Street rural district council. He was a very capable public servant and rightly won the appreciation of the community for which he worked.

Dr. Penfold was born in 1872, the son of Mr. J. B. Penfold, of Brampton, Cumberland, and received his medical education at the University of Edinburgh and King's College, London. He graduated as M.B., C.M. Edin. in 1894, and took the English double qualification several years later, while in 1908 he obtained the diploma of D.P.H. R.C.S.I. For a few years he was in general practice, part of that time being associated with his brother, Dr. W. J. Penfold, now the director of the Baker Research Institute at Melbourne; but in 1901, having decided to enter the public health service, he was appointed medical officer of health for Hexham rural district council. In 1914 he was appointed to the same post with the Bishop Auckland rural district council, and 10 years later, following a redistribution of the public duties, he became medical officer of health to Chester-le-Street. The period over which Dr. Penfold's public work extended will be seen to have been an important one in sanitary administration. He commenced his official duties with the present century, and he was therefore engaged in the promotion of all the changes in public sanitation, in State education as bearing on health, and in the formulation of regulations for the promotion of child welfare which were making their appearance before the outbreak of war, and which during the last 15 years have manifested general activity and, in some directions, remarkable progress. As was natural, having regard to the county in which his duties lay, he had the plight of the mining population always present to his mind, and wherever possible he assisted the miners in their profound difficulties. The slum clearance scheme set in motion by his rural authority is a large undertaking which was initiated with his counsel, and the help which he rendered in this direction will not be forgotten on its completion.

Dr. Penfold married Miss Isa Johnstone, of Brampton, and leaves a widow and three daughters.

DR. ABRAHAM GROVES.—News of the death of Dr. Abraham Groves, of Fergus, Ontario, has reached us this week. He was 88 years of age, and only last year recorded his life work in a book entitled, "All in the Day's Work," which was recently reviewed in these columns. His autobiography showed him to have been throughout more than 60 years of active practice an original and capable surgeon, while he was the first man in Canada to make an abdominal section for the relief of appendicitis. His early operating feats, as recorded by himself, were marked by ingenuity and followed, in some cases, with unusual success. He was for many years medical superintendent of the Royal Alexandra Hospital, Fergus, which has been renamed the Groves Memorial Hospital in his honour, and he thoroughly deserved the public recognition.

DR. JOHN PRATT, who was drowned on May 26th when a rowing boat capsized off the Cumberland coast, was medical officer of health for the Millom rural district council and superintendent of the Millom and Bootle infectious diseases hospitals. He was educated at Queen's College, Cork and Dublin, qualifying in 1904. He served as a temporary surgeon lieutenant in the Navy from November, 1914, and was awarded the Distinguished Service Cross in the following year. He had recently recovered from pneumonia.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

National Health Insurance Bill

ON May 23rd the National Health Insurance and Contributory Pensions Bill was introduced in the House of Commons and read a first time. The principal objects of the Bill are:

(1) To secure that persons who have been contributing to the interlocked schemes of National Health Insurance and Contributory Pensions for a sufficiently long period shall not forfeit their pensions rights or all their health insurance rights if they become unemployed and if the continued absence of contributions is due only to the fact that they are unable to obtain employment; and

(2) to provide that insured persons who are covered for sickness, disablement, and maternity benefits under the Health Insurance Scheme shall not suffer any reduction or suspension of those benefits by reason of arrears of contributions due to unemployment.

The cost of medical benefit and additional treatment benefits of unemployed insured persons will fall equally on the funds of approved societies and on the National Exchequer. It is proposed to set up a new Unemployment Arrears Fund contributed to equally by a levy on the contributions of members of approved societies and by an annual Exchequer grant. The amount of the levy will be such that when added to the equivalent Exchequer grant the sum will enable a grant to be made to each approved society at the rate of threepence halfpenny each week of proved unemployment of its members. In effect the Fund will spread over all the societies the burden of loss of contributions due to unemployment, each society contributing according to the volume of employment, and each receiving a grant in proportion to the amount of unemployment among its members.

The amount required for this purpose is estimated at nearly £1,500,000 a year. A Supplementary Estimate will not be necessary for the current financial year as the Bill provides that any disposable surpluses of the Navy, Army, and Air Force Insurance Fund not required for maintaining the additional prescribed additional benefits are to be paid into the Arrears Fund. At the valuation at the end of 1932 the available surplus was £701,000, and with the accrued interest this ought to be sufficient to provide the Exchequer grant for the first year. Under Clause 11 of the Bill arrears due to unemployment, which under the existing law are excused only to the extent of one-half will be excused in full from July 2nd, 1934. The effect of this concession is that any person who remains unemployed throughout a free insurance period will suffer no reduction of benefits during that period by reason of unemployment. It will also prevent any reduction in the benefits of the very large number of persons who, although in fairly regular employment, have varying periods of unemployment in the course of a contribution year. The increased cost involved in the complete excusal of arrears due to unemployment will also be met out of the Arrears Fund.

Water-supplies Inquiry

In the House of Commons on Monday, May 27th, Mr. ATTLEE asked the Minister of Health whether he could state the extent of the proposed inquiry by a Select Committee into water resources and supplies, and what powers it was proposed to give to the committee.—Sir HILTON YOUNG replied that the law relating to water-supplies required amendment in various particulars and proposals for this purpose had been made from time to time, including proposals in three reports of the Water Advisory Committee of his Department. It was considered that the most appropriate method of investigating the amendments desirable was by a Joint Committee of both Houses of Parliament, who could hear the various interests concerned. The Committee would, of course, be at liberty to investigate other aspects of the matter which they considered relevant to this purpose. It was proposed that the Committee should have the usual powers: to hear evidence and to make recommendations.—Sir F. FREMANTLE asked whether it would be within the purview of this Committee to consider the question of drains and sewage.—Sir HILTON YOUNG said that the *specific purpose* of the inquiry was to consider the water-supply, but his hon. friend would know that one could *not* consider that question without giving *some consideration* to the question of sewage.

Indian Civil Servants and Medical Attendance

In the House of Commons on May 28th, when the Government of India Bill was further considered on report, Mr. BUTLER (Under-Secretary for India) moved an amendment providing that the rights of all persons appointed to a civil service post by the Secretary of State in regard to medical attendance should be prescribed by rules made by the Secretary of State. He said that the Secretary of State had considered with great sympathy certain representations which had been made to him during the Committee stage of the Bill and he had decided that there was a case for adding the general rights in regard to medical attendance of civil servants to the questions on which the Secretary of State would make rules. This was a matter to which members of the civil service attached great importance. They had at present certain rights entitling them to medical treatment for themselves and in certain cases for their wives and families. The availability, for example, of a British medical officer in a station where there was a substantial body of civilians was a right to which they attached great importance and in view of the conditions of service in India and the special problems which arose in regard to medical attendance there he thought that the House would regard it as legitimate that this amendment should be made to the Bill.

The amendment was agreed to.

In the House of Lords on Wednesday, May 22nd, the West Riding of Yorkshire Mental Hospitals Board (Superannuation) Bill was read the third time. The Bill was introduced in the House of Commons on the same day and read a first time.

HOUSE OF COMMONS

WEDNESDAY, MAY 22ND

Ex-Servicemen in Edenhall Hospital

Mr. GUY asked the Minister of Pensions how many ex-Service men were undergoing treatment in Edenhall Hospital, and how many of these were in receipt of treatment allowances.—Major TRYON replied: There were 82 men undergoing treatment in Edenhall Hospital on May 20th. In 63 of these cases the men are in receipt of treatment allowances or continue to receive remuneration in excess of the treatment allowances which would otherwise be payable, and 15 are receiving allowances at pension rates. Of the remaining 4 cases 2 are at present under consideration.

Vivisection Certificates

Mr. GROVES asked the Home Secretary on what grounds a certificate for vivisection was issued, in view of the ambiguity of the wording of the licences and the wide powers conferred by various classes of certificates; and what steps, if any, were being taken to ensure that licences were not issued to persons merely interested for commercial ends.—Sir JOHN GILMOUR replied: Certificates given under the provisos to Section 3 of the Cruelty to Animals Act, 1876, dispensing with some of the conditions laid down in the earlier part of the section are given by e scientific authorities named in Section 11 of the Act, d not by the Home Office. A copy of any certificate ven must be forwarded to the Secretary of State and es not come into operation until one week after a copy s been so forwarded. The power of the Secretary of ate is confined to disallowing or suspending any certi- ate given under the Act.

Mr. GROVES asked the Home Secretary which establish- ents or individuals held licences for vivisection and did t fall into the category of either public or private mpanies.—Sir JOHN GILMOUR replied: Licences to rform experiments on living animals under the Cruelty Animals Act, 1876, are in all cases granted to indi- duals, and not to establishments or public or private mpanies.

THURSDAY, MAY 23RD

Medical Referees and Nystagmus Cases

Mr. TINKER asked the Home Secretary if he was aware the feeling amongst the workmen suffering from nystag- us against there being only one medical referee to ecide on cases sent before him, and if he would consider e advisability of making two medical referees in place one to certify the condition of the workman.—Sir OHN GILMOUR replied: The hon. Member's suggestion ould involve an important departure from the present rovisions as to medical certification which could not be dopted without full inquiry. The whole position in gard to this disease is under consideration.

Poisons and Pharmacy Act, 1933

Mr. HALL-CAINE asked the Home Secretary what rogress had been made with the drawing up of a new st of poisons under the Poisons and Pharmacy Act of 933: and by what date it was anticipated this new list ould be available.—Sir JOHN GILMOUR replied: I am formed that the Poisons Board has prepared the Poisons ist and is about to submit it to me, together with its ecommendations in regard to the rules to be made under he Act. It is hoped that the proposals of the Board ill be available to Members before the Whitsun recess.

Protection of Civilians from Gas Attack

Mr. MANDER asked the Home Secretary if he would ive particulars of the work to be undertaken by the egion of Frontiersmen in connexion with the protection f the civil population during gas attacks; and whether his included gas-mask drill, compulsory or otherwise.— Sir J. GILMOUR replied: I understand that the Legion f Frontiersmen, like some other voluntary organisations, s in touch with the Order of St. John and the British Red Cross Society with a view to assisting in the measures o be organised by those bodies for the alleviation of the onsequences of air attack. I have informed the Legion hat in my opinion assistance of this nature would be work of national importance. No specific duties have been allotted to this body at present, and any drill which may have been undertaken has been arranged voluntarily.

Flooding in Palestine; Fear of Malaria Epidemic

Mr. LECKIE asked the Secretary of State for the Colonies whether he was aware that on May 1st last the Sea of Galilee overflowed its banks and flooded the cellars of some of the houses in Tiberias, as well as the low-lying ground; that, owing to the formation of stagnant pools, there was fear of an epidemic of malaria; and whether he would take steps to insist that the sluices in the River Jordan should be kept open to prevent the raising of the lake in future above its normal level.—Sir PHILIP CUNLIFFE-LISTER replied: I have no information regarding the situation referred to in the hon. Member's question, but I have asked the High Commissioner for Palestine for a report.

Sewage Purification on the Tweed

Captain RAMSAY asked the Secretary of State for Scotland whether he was aware that at times when the water level of the upper reaches of the River Tweed was low there was serious pollution of the river through sewage and trade effluents, and that this state of affairs was likely to become much more marked by the present scheme to impound a substantial quantity of the head water for the Edinburgh supply; and what action he proposed to take.—The Lord ADVOCATE replied: With regard to the first part of the question my right hon. friend is aware that there is considerable pollution of the Tweed at certain points by sewage and trade effluents. With regard to the second and third parts, the proposals of the Edinburgh Corporation are contained in a Draft Provisional Order which has been lodged by the corporation and is being considered in accordance with the Private Legislation Procedure (Scotland) Acts, 1929 and 1933. In the circumstances my right hon. friend regrets that he can make no comment on the latter at present.

MONDAY, MAY 27TH

Births in England and Wales

Mr. GEORGE GRIFFITHS asked the Minister of Health the number of births in England and Wales for the years 1932, 1933, and 1934.—Sir HILTON YOUNG replied: The following is the information asked for:—

England and Wales: years.	Live births.	Stillbirths.	Total live and stillbirths.
1932	613,972	26,471	640,443
1933	580,413	25,084	605,497
1934 (provisional)	597,642	25,209	622,851

Maternal Mortality: Suggested Royal Commission

Mr. GRAHAM WHITE asked the Prime Minister if he would consider the advisability of appointing a Royal Commission to conduct a comprehensive inquiry into the causes of maternal mortality and make recommendations in regard thereto.—Mr. MACDONALD replied: No sir; I am not at present satisfied that an inquiry into the subject by a Royal Commission would be of advantage. I would refer the hon. Member to the answer given by the Minister of Health on March 28th (THE LANCET, April 6th, p. 838). The hon. Member will see that special inquiries are in progress in those areas where the incidence of maternal mortality is, or has been, most marked, and that when those inquiries are completed, my right hon. friend proposes to lay a White Paper on the subject before the House.

Infant's Death after Vaccination

Mr. GROVES asked the Minister of Health whether he was aware that Margaret Jane Pinnock, of Staines Road, Laleham, a one-month old baby, died from vaccination performed when the infant was five days old in order to enter an adoption home; and whether he would communicate with the societies that arrange for the adoption of children and remind them of the advice given in the last Report of the chief medical officer of the Ministry, to the effect that the authorities of such institutions should abolish their vaccination regulations.—Sir HILTON YOUNG replied: I am aware of the case referred to in the first part of the question. As regards the second part, I do not find that the last report of the chief medical officer of my Department advised that the authorities of institutions should abolish their vaccination regulations. The passage in the report to which the hon. Member appears to refer is not relevant to this case as it relates to the vaccination of adolescents and children of school age who have not previously been vaccinated.

Milk for School-children

Sir PERCY HURD asked the Minister of Health whether he was taking any action in respect of the refusal of certain county council medical officers to sanction the supply to schools of other than pasteurised milk; and whether his Ministry held it to be within the competence of medical officers to exercise their discretion in a manner contrary to instructions from their councils.—Sir HILTON YOUNG replied: The answer to the first part of the question is in the negative. As regards the second part of the question, I am advised that under the arrangements made by the Milk Marketing Board for the supply of milk at reduced rates, the approval of the source and quality of the supply is a matter for the professional discretion of the Medical Officer of Health.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

National Health Insurance Bill

On May 23rd the National Health Insurance and Contributory Pensions Bill was introduced in the House of Commons and read a first time. The principal objects of the Bill are:

(1) To secure that persons who have been contributing to the interlocked schemes of National Health Insurance and Contributory Pensions for a sufficiently long period shall not forfeit their pensions rights or all their health insurance rights if they become unemployed and if the continued absence of contributions is due only to the fact that they are unable to obtain employment; and

(2) to provide that insured persons who are covered for sickness, disablement, and maternity benefits under the Health Insurance Scheme shall not suffer any reduction or suspension of those benefits by reason of arrears of contributions due to unemployment.

The cost of medical benefit and additional treatment benefits of unemployed insured persons will fall equally on the funds of approved societies and on the National Exchequer. It is proposed to set up a new Unemployment Arrears Fund contributed to equally by a levy on the contributions of members of approved societies and by an annual Exchequer grant. The amount of the levy will be such that when added to the equivalent Exchequer grant the sum will enable a grant to be made to each approved society at the rate of threepence halfpenny each week of proved unemployment of its members. In effect the Fund will spread over all the societies the burden of loss of contributions due to unemployment, each society contributing according to the volume of employment, and each receiving a grant in proportion to the amount of unemployment among its members.

The amount required for this purpose is estimated at nearly £1,500,000 a year. A Supplementary Estimate will not be necessary for the current financial year as the Bill provides that any disposable surpluses of the Navy, Army, and Air Force Insurance Fund not required for maintaining the additional prescribed additional benefits are to be paid into the Arrears Fund. At the valuation at the end of 1932 the available surplus was £701,000, and with the accrued interest this ought to be sufficient to provide the Exchequer grant for the first year. Under Clause 11 of the Bill arrears due to unemployment, which under the existing law are excused only to the extent of one-half will be excused in full from July 2nd, 1934. The effect of this concession is that any person who remains unemployed throughout a free insurance period will suffer no reduction of benefits during that period by reason of unemployment. It will also prevent any reduction in the benefits of the very large number of persons who, although in fairly regular employment, have varying periods of unemployment in the course of a contribution year. The increased cost involved in the complete excusal of arrears due to unemployment will also be met out of the Arrears Fund.

Water-supplies Inquiry

In the House of Commons on Monday, May 27th, Mr. Attlee asked the Minister of Health whether he could state the extent of the proposed inquiry by a Select Committee into water resources and supplies, and what powers it was proposed to give to the committee.—Sir Hilton Young replied that the law relating to water-supplies required amendment in various particulars and proposals for this purpose had been made from time to time, including proposals in three reports of the Water Advisory Committee of his Department. It was considered that the most appropriate method of investigating the amendments desirable was by a Joint Committee of both Houses of Parliament, who could hear the various interests concerned. The Committee would, of course, be at liberty to investigate other aspects of the matter which they considered relevant to this purpose. It was proposed that the Committee should have the usual powers: to hear evidence and to make recommendations.—Sir F. Fremantle asked whether it would be within the purview of this Committee to consider the question of drains and sewage.—Sir Hilton Young said that the specific purpose of the inquiry was to consider the water-supply, but his hon. friend would know that one could not consider that question without giving some consideration to the question of sewage.

Indian Civil Servants and Medical Attendance

In the House of Commons on May 28th, when the Government of India Bill was further considered on report, Mr. Butler (Under-Secretary for India) moved an amendment providing that the rights of all persons appointed to a civil service post by the Secretary of State in regard to medical attendance should be prescribed by rules made by the Secretary of State. He said that the Secretary of State had considered with great sympathy certain representations which had been made to him during the Committee stage of the Bill and he had decided that there was a case for adding the general rights in regard to medical attendance of civil servants to the questions on which the Secretary of State would make rules. This was a matter to which members of the civil service attached great importance. They had at present certain rights entitling them to medical treatment for themselves and in certain cases for their wives and families. The availability, for example, of a British medical officer in a station where there was a substantial body of civilians was a right to which they attached great importance and in view of the conditions of service in India and the special problems which arose in regard to medical attendance there he thought that the House would regard it as legitimate that this amendment should be made to the Bill.

The amendment was agreed to.

In the House of Lords on Wednesday, May 22nd, the West Riding of Yorkshire Mental Hospitals Board (Superannuation) Bill was read the third time. The Bill was introduced in the House of Commons on the same day and read a first time.

HOUSE OF COMMONS

WEDNESDAY, MAY 22ND

Ex-Servicemen in Edenhall Hospital

Mr. Guy asked the Minister of Pensions how many ex-Service men were undergoing treatment in Edenhall Hospital, and how many of these were in receipt of treatment allowances.—Major Tryon replied: There were 82 men undergoing treatment in Edenhall Hospital on May 20th. In 63 of these cases the men are in receipt of treatment allowances or continue to receive remuneration in excess of the treatment allowances which would otherwise be payable, and 15 are receiving allowances at pension rates. Of the remaining 4 cases 2 are at present under consideration.

Vivisection Certificates

Mr. Groves asked the Home Secretary on what grounds a certificate for vivisection was issued, in view of the ambiguity of the wording of the licences and the wide powers conferred by various classes of certificates; and what steps, if any, were being taken to ensure that licences were not issued to persons merely interested for commercial ends.—Sir John Gilmour replied: Certificates given under the provisos to Section 3 of the Cruelty to Animals Act, 1876, dispensing with some of the conditions laid down in the earlier part of the section are given by pose. The sum includes the Bank's usual annual scription to the King's Fund, and certain annual scriptions which the Bank has previously made direct certain London hospitals. The balance is to be dis- buted by the Fund in response to such appeals from ndon hospitals as the Bank may receive and forward the Fund for consideration. The hospitals to be isted under the latter head, and the allocation among h hospitals, will be determined by the Fund at its eretion.

"It is satisfactory to know that the amount thus rusted to the King's Fund represents an increase upon average annual total sum hitherto dispensed by the nk in direct donations. These grants will be decided he autumn, just before our ordinary distribution. They l be quite distinct from the ordinary grants, and will ch the selected hospitals as donations from the Bank England, per King Edward's Hospital Fund. I should e, in your name and in mine, to express our appreciation the action of the Bank of England, and the pleasure it l give us to use on their behalf all our knowledge of circumstances of the various hospitals."

His Royal Highness then recorded the loss by ath of prominent members of the council since last meeting, making special reference to Lord merleyton, the senior honorary secretary, Mr. hitley, the chairman of the Parliamentary Committee the council, and Sir John Rose Bradford, chairman the out-patients' arrangements committee, adding at he had appointed Lord Macmillan in place of . Whitley, and Dr. Morley Fletcher in place of John Rose Bradford.

ACCOUNTS FOR 1934

ir Edward Peacock, hon. treasurer of the Fund, in moving adoption of the accounts, said that at the distribution December there was still a small deficit, but this was vered before the end of the year, though with a margin only £426. The total amount distributed was again 20,000. Annual subscriptions were £200 more than 1933 and donations £1,600 more. Legacies amounted £77,000. During the past seven years the lowest ure for legacies had been £58,000, and the average had en £70,000. There was no doubt that the King's Fund, th its annual grants to 200 hospitals and convalescent mes, made a strong appeal to testators who wished to leave legacies or residues to charity, but had no particular institution in their minds. But they would be glad to see a larger proportion of the increased distribution provided for by annual subscriptions. He would like to refer to the advantages, both to subscribers and to the Fund, from the use of seven-year agreements, which enabled income tax and surtax to be saved. Last year the Fund received 67 annual subscriptions under agreements of that kind, ranging from £1 1*s.* to £4000, and amounting almost exactly to £14,000, the total received to date being £128,000.

The motion for the adoption of the Accounts, having been seconded by Sir Basil Mayhew, was then put and carried unanimously.

THE ANNUAL REPORT

The annual report for 1934 was adopted unanimously while the report of revenue and propaganda committees was presented and a resolution passed unanimously that it should be published. Lord Donoughmore then presented the report on

THE SILVER JUBILEE DISTRIBUTION

when he moved the recommendation that the sum of £120,000, representing the unspent income balances of the last twenty-five years and the profits from the Jubilee seats, together with any other sums which might be received in connexion with the Jubilee and which the general council might allocate for the purpose, be made the subject of a special Silver Jubilee Distribution in the autumn among the hospitals of London, in aid of programmes of capital expenditure already notified to the distribution committee by May 28th, the date of the council meeting.

The recommendation was seconded by Sir Ernest Pooley and carried.

The meeting closed with a vote of thanks to his Royal Highness, which was proposed by the Bishop of London, and seconded by Prof. Winifred Cullis. The vote having been carried with acclamation, His Royal Highness briefly acknowledged the vote.

MEDICAL NEWS

ociety of Apothecaries of London

At recent examinations the following candidates were ccessful :—

Surgery.—A. Aspinall, Univ. of Manch.; W. H. Bayley, . Thomas's Hosp.; W. C. Campbell, Univ. of Birm.; F. wking, Univ. of Oxf. and St. Bart.'s Hosp.; H. N. Levitt, y's Hosp.; J. Mason, Middlesex Hosp.; A. G. Sweetapple, iv. of Sydney; and R. L. Walmsley, Univ. of Camb. and iv. of Leeds.

Medicine.—H. Burrows, Univ. of Manch.; E. H. E. Cross, . Mary's Hosp.; R. N. Crossley, Univ. of Manch.; C. S. J. ndekar, Univ. of Durham; H. O. Dole, Univ. of Manch.; . A. Kamel, Welsh National School of Medicine; B. S. Minden, . George's Hosp.; J. C. Paterson, Univ. of Oxf. and . George's Hosp.; A. G. Sweetapple, Univ. of Sydney; and W. Van Mentz, London Hosp.

Forensic Medicine.—N. A. Bicchieri, St. George's Hosp.; . O. Dole, Univ. of Manch.; and A. G. Sweetapple, Univ. of dney.

Midwifery.—F. Brodahl and E. T. Garthwaite, St. Bart.'s osp.; W. J. Pinto, Univ. of Madras; A. G. Sweetapple, iv. of Sydney; P. A. Walshaw, Univ. of Leeds; and J. L. redden, London Hosp.

The following candidates, having completed the final amination, are granted the diploma of the society titling them to practise medicine, surgery, and idwifery :—

W. C. Campbell, E. H. E. Cross, R. N. Crossley, C. S. J. andekar, J. Mason, B. S. Minden, J. C. Paterson, A. G. eetapple, and J. L. Wredden.

anchester Hospital Scheme

The Manchester public health committee are considering £50,000 scheme for the construction of a new wing at aguley Sanatorium.

University of Glasgow

The following degrees have lately been conferred :—

M.D.—*W. R. Snodgrass, †David Clyde, ‡W. A. Murray, ‡M. M. Scott, ‡William Tennent, ‡J. A. Waterman, John Leishman, E. W. McCormick, Jean M. Mackintosh, A. W. McRorie, C. D. F. Morton, and F. R. Wilson.

M.B. Ch.B.—*A. M. Pugh, *Theodore Crawford, *R. G. Henderson, ‡D. H. Wallace, ‡J. A. C. Knox, ‡J. B. Brown, R. G. Anderson, S. Y. Baird, B. N. P. Bannatyne, R. S. Barclay, P. M. Bennett, A. C. Blair, W. M. Boyd, Donald Campbell, Elizabeth N. Christie, D. S. Crawford, W. F. Cruickshank, I. M. Drysdale, J. W. Eidlin, A. W. V. Eley, A. D. Fleming, Maev Gallagher, Mima M. Gemmell, W. R. Gemmell, H. B. Gillespie, Abraham Glasser, Julius Gordon, J. F. Harper, Phebe N. Harvey, Wolff Hirshow, Allen Iredale, A. C. Jacobsen, D. T. Kemp, A. S. Kitchin, H. C. Kodilinye, J. H. Levack, Louis Levine, Isidor Livingstone, James McAulay, John McCreadie, R. M. McGowan, A. F. McIntyre, J. P. McIntyre, G. N. MacKenzie, A. C. Mayer, K. R. Minto, N. R. Murdoch, A. M. Murray, Hugh Richmond, M. S. Robertson, William Sharpe, J. A. Sinclair, Solomon Slonimsky, J. A. Squair, Ralph Steinacre, Sarah Stewart, George Struthers, J. H. Taylor, Andrew Tracy, James Travers, E. H. Wallace, Jeanie F. Watson, I. B. L. Weir, David Wolfson, David Wright, and James Wyper

* With honours. † With high commendation. ‡ With commendation.

Dr. Arthur James Ballantyne has been appointed the first holder of the new chair of ophthalmology established in the university under the terms of the will of Dr. Gavin Tennant.

Dr. Ballantyne was born in 1876 and received his medical education at the universities of Glasgow and Vienna. After graduating in 1898 he held house appointments at the Royal Infirmary, and in 1901 went as house surgeon to the Glasgow Eye Infirmary, where he joined the honorary staff in the following year. In 1909 he was appointed professor of physiology

TUESDAY, MAY 28TH

Medical Reports and Remand of Prisoners

Captain **CUNNINGHAM-REID** asked the Home Secretary whether he had considered the recommendation contained in the Report of the Commissioners of Prisons for 1933 that it would be an advantage in police-court cases if the usual period of remand for eight days on bail or in custody could be extended to 14 or 21 days, without producing the prisoner, if the court was satisfied by a medical report that such extension was desirable to ascertain the mental condition of the prisoner; and whether he proposed to accept this recommendation and implement it by the introduction of the necessary legislation.—Sir J. **GILMOUR** replied: This recommendation has been noted for consideration when there is an opportunity for legislation, but I cannot say when it will be possible to give effect to it.

Casual Labourer's Death at Portsmouth

Mr. **THORNE** asked the Home Secretary if he had received a report from his factory inspector in connexion with the death of a casual labourer at Portsmouth who was assisting to carry an acetylene welding-plant; if he could state the cause of the accident; and whether he had any record of similar cases.—Sir J. **GILMOUR** replied: I have received a preliminary report from which it appears that the accident occurred in an unusual manner owing to sparks entering an acetylene generator which was not altogether cleared of gas. The case will be followed up with a view to the prevention of any similar accident.

Shorter Hours in Industry

Captain **FULLER** asked the Minister of Labour if any steps were now being taken through the International Labour Office to negotiate agreements for the shortening of hours in industry.—Mr. R. S. **HUDSON** (Parliamentary Secretary to the Ministry of Labour) replied: Proposals designed to secure International Conventions limiting hours of work in Public Works undertaken or subsidised by Governments, and in the iron and steel, building and contracting, glass bottle, and coal-mining industries, are to be considered at the International Labour Conference which opens in Geneva at the beginning of next month.

KING EDWARD'S HOSPITAL FUND FOR LONDON

THE annual meeting of the Fund was held at St. James's Palace on Tuesday when H.R.H. the Prince of Wales, the president of the Fund, presided over the meeting. He commenced by reading a resolution of congratulation to the King, on the occasion of his Silver Jubilee, which he had already forwarded to His Majesty, and to which the gracious reply from the King was received confirming His Majesty's deep personal interest in the Fund, and the satisfaction with which, as a past president for nine years, he had watched its steady growth until it had become an essential part of the voluntary hospital system of London.

His Royal Highness continued by stating the King's wish that his Silver Jubilee should not be marked by any general appeal on behalf of hospitals, but by the foundation of a new Trust Fund, with a new purpose.

"It is indeed natural," said His Royal Highness, "that this Council should wish to mark the occasion in some exceptional way. The King's Fund was founded to commemorate the Diamond Jubilee of Queen Victoria in 1897; it was augmented by the Coronation gift to King Edward the Seventh in 1902; and its last special appeal was for the Thank-offering Fund for the recovery of King George in 1929. The King was its President for nine years, and since his accession has taken an active interest as its Patron.

"Briefly, the proposal is this. During the 25 years of the King's reign the ordinary distribution has been increased from £150,000 a year to £300,000. In other words, it has been exactly doubled. But every year a small margin of the annual income has been kept in hand; a kind of estimated budget surplus. This policy has been successful, and the small margins have accumulated. During the post-war financial crisis a great inroad was made into the reserves by the emergency distribution of £250,000 in 1920, itself a striking illustration of the value of a central fund. But since 1920 the small annual margins have again been accumulating, and they have now reached a total of about £109,000.

"There is also another sum of money available, more closely associated with the Jubilee. It arises from the sale of the seats which were offered to the King's Fund by His Majesty's Office of Works for the processions of May 6th and May 9th, and with the personal approval of the King. This comes to about another £11,000, and raises the available total to approximately £120,000.

"This additional distribution will have a special object. The hospitals themselves have, in spite of the financial depression, gone on extending their work and also increasing their income. The result has been that the *hospitals, like the King's Fund*, have, taken as a whole, just balanced their budgets, with a small margin on *the right side*, in spite of deficits at some hospitals where the circumstances are exceptional. The figures for 1934 tell the same tale. It has been the result of a great and most creditable effort on the part of the hospitals and their subscribers, among whom I wish particularly to mention their own patients.

"But this is not enough. It is true that hospital income has just kept pace with the increased expenditure, and there have been some very successful appeals for reconstruction and extension. But a good deal of urgent work in the way of improvements to buildings and equipment has fallen into arrears.

"The money we have available will be enough to enable us to help with some of this work, though not with all of it.

"The proposal, therefore, is that the sum of £120,000, representing the unspent income balances of the last 25 years and the profits from the Jubilee seats, together with any other sums which may be received in connexion with the Jubilee and which the General Council may allocate for the purpose, should be made the subject of a special Silver Jubilee Distribution in the autumn among the hospitals of London, in aid of programmes of capital expenditure already notified to the Distribution Committee."

His Royal Highness went on to say that the accounts showed the income for the year to have just covered the distribution, such small surpluses as it was proposed to distribute having been accumulated before the crisis of 1931, when the annual grants were increased at one bound from £275,000 to £300,000. Since that effort, he said, the margin of income over distribution had been very narrow.

He referred to the out-patients' arrangements committee of the Fund whose report dealt with time-saving methods in the out-patient departments of hospitals, especially the reduction of waiting at the dispensary stage of procedure. The committee had collected information from all the hospitals, had made visits to certain of them, and had circulated their report for the observation of the institutions. His Royal Highness continued:—

"I have now some gratifying news. You already know that of recent years various donors have entrusted the King's Fund with the administration of sums of money for special purposes connected with hospitals. Another example of this has just occurred. The Bank of England have asked King Edward's Hospital Fund to deal on their behalf with appeals which they may receive from London hospitals. With this object the Bank have set aside and paid to the Fund a sum for distribution, this being the first of seven annual payments which they have undertaken to make to the Fund for this urpose. The sum includes the Bank's usual annual ubscription to the King's Fund, and certain annual ubscriptions which the Bank has previously made direct certain London hospitals. The balance is to be distributed by the Fund in response to such appeals from ondon hospitals as the Bank may receive and forward the Fund for consideration. The hospitals to be ssisted under the latter head, and the allocation among uch hospitals, will be determined by the Fund at its scretion.

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Forensic Medicine.—N. A. Bicchieri, St. George's Hosp.; H. O. Dole, Univ. of Manch.; and A. G. Sweetapple, Univ. of Sydney.

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The following degrees have lately been conferred:—

M.D.—*W. R. Snodgrass, †David Clyde, ‡W. A. Murray, ‡M. M. Scott, ‡William Tennent, ‡J. A. Waterman, John Leishman, E. W. McCormick, Jean M. Mackintosh, A. W. McRorie, C. D. F. Morton, and F. R. Wilson.

M.B. Ch.B.—*A. M. Pugh, *Theodore Crawford, *R. G. Henderson, ‡D. H. Wallace, ‡J. A. C. Knox, ‡J. B. Brown, R. G. Anderson, S. Y. Baird, B. N. P. Bannatyne, R. S. Barclay, P. M. Bennett, A. C. Blair, W. M. Boyd, Donald Campbell, Elizabeth N. Christie, D. S. Crawford, W. F. Cruickshank, I. M. Drysdale, J. W. Eidlin, A. W. Y. Eley, A. D. Fleming, Maey Gallagher, Mima M. Gemmell, W. R. Gemmell, H. B. Gillespie, Abraham Glasser, Julius Gordon, J. F. Harper, Phebe N. Harvey, Wolff Hirshow, Allen Iredale, A. C. Jacobsen, D. T. Kemp, A. S. Kitchin, H. C. Kodilinye, J. H. Levack, Louis Levine, Isidor Livingstone, James McAulay, John McCreadie, R. M. McGowan, A. F. McIntyre, J. P. McIntyre, G. N. MacKenzie, A. C. Mayer, K. R. Minto, N. R. Murdoch, A. M. Murray, Hugh Richmond, M. S. Robertson, William Sharpe, J. A. Sinclair, Solomon Slonimsky, J. A. Squair, Ralph Steinacre, Sarah Stewart, George Struthers, J. H. Taylor, Andrew Tracy, James Travers, E. H. Wallace, Jeanie F. Wetson, I. B. L. Weir, David Wolfson, David Wright, and James Wyper

* With honours. † With high commendation. ‡ With commendation.

Dr. Arthur James Ballantyne has been appointed the first holder of the new chair of ophthalmology established in the university under the terms of the will of Dr. Gavin Tennant.

Dr. Ballantyne was born in 1876 and received his medical education at the universities of Glasgow and Vienna. After graduating in 1898 he held house appointments at the Royal Infirmary, and in 1901 went as house surgeon to the Glasgow Eye Infirmary, where he joined the honorary staff in the following year. In 1909 he was appointed professor of physiology at the Anderson College of Medicine, and from 1915 to 1920 was professor of ophthalmology both there and at St. Mungo's College. Since the latter year he has been lecturer in ophthalmology at the University. Dr. Ballantyne is now surgeon to the Eye Infirmary, consulting ophthalmological surgeon to the Western Infirmary, and honorary consulting ophthalmological surgeon to the Royal Maternity and Women's Hospital. He has been a vice-president of the Ophthalmological Society of the United Kingdom and of the Section of Ophthalmology of the Royal Society of Medicine, and besides many contributions to medical journals he is the author of a "Pocket Book of Ophthalmology."

Charing Cross Hospital Medical School

Dr. Andrew Topping, of the public health department of the London County Council has been appointed lecturer in hygiene and public health at this school in succession to the late Dr. C. W. Hutt.

British Postgraduate Medical School

An intensive refresher course intended primarily for general practitioners will be held at this school from June 17th to 29th. Particulars may be had from the dean of the school, Ducane-road, London, W.12, and early application is recommended because membership of the course is limited.

National Hospital for Diseases of the Heart

A special course will be held at this hospital from June 24th to July 5th, both mornings and afternoons. The membership is limited to twenty, and application should be made to the dean of the hospital, Westmoreland-street, London, W.1.

International Congress in Switzerland

From Sept. 9th to 14th a congress will be held at Montreux at which various medical subjects will be introduced by speakers from many countries, including Sir Henry Dale, F.R.S., from England. Particulars may be had from the secretariat of the Semaine Médicale Internationale en Suisse, Klosterberg 27, Basle.

Maternity and Child Welfare Conference

The National Conference on Maternity and Child Welfare will be held at the County Hall, Westminster Bridge, S.E., from July 1st to 3rd, under the presidency of Sir Hilton Young, the Minister of Health. A short post-graduate course for medical practitioners will be held on June 29th and 30th. Particulars may be had from the National Association for the Prevention of Infant Mortality, 117, Piccadilly, London, W.1.

Health Congress at Harrogate

The Royal Institute of Public Health and the Institute of Hygiene are next week holding their first joint congress, and the proceedings open on June 4th at Harrogate, with Lord Harewood as president. The five sections are devoted to state medicine and industrial hygiene, women and children, and the public health, tuberculosis, rheumatism and allied diseases, and hydrology, climatology and meteorology, and their presidents are respectively, Prof. J. Johnstone Jervis, Lady Evelyn Collins, Sir Pendrill Varrier-Jones, Sir William Willcox, and Sir Henry Gauvain. The arrangements include a garden party at Harewood House, a civic reception, a visit to Knaresborough, and many excursions in the neighbourhood.

Inquests in London

During the year 1934 there were 8548 deaths reported to London coroners, 15 more than in 1933. Of these deaths 721 took place in mental hospitals, 2351 in other hospitals and institutions. In the exercise of their discretion the coroners held inquests in 3455 cases or 88 less than last year. Post-mortem examination was directed by the coroner in 82 per cent. of inquest cases and 64 per cent. of the cases in which no public inquiry was thought necessary. A verdict of murder was returned in 11 cases, of suicide in 690 cases (70 less than last year). Deaths from want of attention at birth increased from 28 to 32. In all 1925 people met their death by accident (40 more than last year). There were 50 deaths by drowning. A verdict of "death from natural causes" was returned in 543 cases and there were 7 verdicts of "cause of death unknown." Of the total inquests 992 were held with juries. The information is taken from a report to the public control committee of the London County Council.

Dr. E. P. Cathcart, F.R.S., regius professor of physiology in the University of Glasgow, has been appointed chairman of the Committee on Scottish Health Services in succession to the late Sir John Dove-Wilson.

Cambridge Graduates Medical Club

A club dinner will be held at Sidney Sussex College, Cambridge, on Friday, June 28th, 7.30 for 7.45 P.M., at which Sir Walter Langdon-Brown, regius professor of physic, will preside. Accommodation for the night can be provided at the college. Cambridge graduates not already members of the club should communicate with one of the hon. secretaries, Dr. F. G. Chandler, 1, Park-square, London, N.W. 1, or Mr. W. D. Doherty, 10, Upper Wimpole-street, W. 1.

Ophthalmological Congress in Berlin

The second international Kongress für Irisdiagnostik, which originally was to have been held in May, will now take place in Berlin from Sept. 12th–15th. The secretary of the congress may be addressed at Leubnitzerstr. 2, Dresden A 24.

Research Defence Society

The annual general meeting of this society will be held at the London School of Hygiene and Tropical Medicine, Keppel-street, London, on Wednesday, June 12th, when the chair will be taken by the president, Lord Lamington. The ninth Stephen Paget Memorial Lecture will be delivered by Sir Frederick Hobday, principal and dean of the Royal Veterinary College, whose address on the relief of animal suffering will be illustrated by lantern and cinematograph.

London and Counties Medical Protection Society Limited

An extraordinary general meeting of this society will be held at Victory House, Leicester-square, London, on Wednesday, June 12th, at 3.30 P.M., when the annual general meeting will follow. The business of the meeting will be, in addition to receiving and adopting the annual report and balance sheet, an election to fill the place of the late Sir John Rose Bradford.

Opening of the New Middlesex Hospital

Last Wednesday the new Middlesex Hospital was declared open by the Duke of York, who in 1928 laid its foundation stone. The hospital has cost £1,250,000, of which £300,000 was received from an anonymous donor, and £200,000 from Mr. E. W. Meyerstein. The institute which bears his name was the gift of Sir John Bland-Sutton; Mr. S. A. Courtauld built the institute of bio-chemistry and endowed the chair of bio-chemistry; and Mr. W. H. Collins has given the new X ray diagnostic department.

The Duke of York, who was accompanied by the duchess, was met in the courtyard of the hospital by H.R.H. Prince Arthur of Connaught, president of the hospital. Prince Arthur, in welcome, pointed out that the reign whose jubilee had just been celebrated had made remarkable attempts to improve the condition of the people as a whole and to bring about a clearer realisation of the responsibilities of wealth. The Duke of York, in declaring the buildings open, congratulated the generous supporters of the voluntary hospital system on their great accomplishment at the Middlesex, and, speaking as president of the British Empire Cancer Campaign, pointed to the important part played by the hospital in the fight against that disease. Their Royal Highnesses then made a tour of the hospital and many of the visitors followed suit.

Demonstrations of Contraceptive Technique

On Thursday, June 6th, at 2.30 p.m., a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher at the Constructive Birth Control Clinic, 108, Whitfield-street, London, W.1. Those attending will be enabled to practise the application of various contraceptive devices. Requests for tickets (which will be supplied to medical practitioners and senior students only) should be made in writing to the hon. secretary of the clinic.

rporation of the City of London: Public Health Committee

A presentation luncheon was given on Wednesday t to the past chairman of this committee, Sir Percy epherd, when Captain G. S. Elliston, M.P., took the air and the Lord Mayor and Sheriffs of the City were ıong the guests. After the loyal toast, Mr. Geoffrey akespeare, M.P., Parliamentary Secretary to the nistry of Health, proposed the health of the Lord Mayor, d spoke eloquently of the duties that devolved on the rporation of the City in respect to public health, point- g out how multifarious were the directions in which e services of the committee were required. The resi- nt population of the City might be small, but though ly 10,000 persons slept in the City, the better part of million passed their working lives in it, while the food pplied in bulk were in relation not to the residents but the enormous county of London. He spoke of the ork that had been put in by the House of Commons regard to the Housing Bill, work now nearing its com- etion. Captain Elliston, proposing the health of the ast chairman, Sir Percy Shepherd, related in an amusing ay the duties of the chairman of the public health com- ittee to the audience, testifying to the extremely satis- ctory way in which his predecessor had discharged those uties. As far as they concerned the resident population at population was in charge of the committee from con- eption to cremation. Sir Percy Shepherd having replied, aptain Elliston proposed the health of the guests. ord Balfour of Burleigh in reply spoke of the merits f the Housing Bill and the work which the measure as resented implied, but thought that after its issue from he House of Commons the House of Lords might have omething to say. Sir George Truscott, senior alderman, roposed the health of the chairman, to which Captain lliston briefly replied.

ebanon Hospital for Mental Diseases

At the thirty-sixth annual meeting, held at Friends House, Euston-road, on May 20th, the chairman, Lord Alness, said that the history of this hospital was a romance. The acorn of 1896 had in 1935 become a spreading oak tree. In its inception two eminent Scottish psychiatrists—Thomas Clouston and David Yellowlees—now long deceased, had played a leading part; it was the latter who conceived the idea of building the hospital on the cottage or pavilion system. In memory of them the new building opened in November, 1933, had been named the Scottish House. But despite the extensions of recent years there was still need for a larger institution. In Syria there was only one bed in mental hospitals for every 16,000 people. After the audience had stood in respect for the memory of Dr. Henry Watson Smith, medical director for 25 years, who died suddenly shortly after the last annual meeting, Dr. Percy Smith presented the medical report, and Dr. E. W. G. Masterman the report of the general committee. Dr. Masterman said that Dr. R. Stewart Miller, who took up duty as director last September, was intimately acquainted with mental diseases in the Near East through his work as head of the Government mental hospital at El Khanka, near Cairo; he spoke Arabic and French, and was familiar with the officials and ways of these countries. Soon after his arrival in Syria, Dr. Miller had been appointed lecturer in mental diseases at the University of Beirût, and mental expert to the *criminal court*. The director's report showed the average number of patients in residence during the four quarters of the last twelvemonth to be 273, 279, 307, and 314. The ever-increasing demand for accommodation had required the addition of new wings to two of the older houses, enlargement of the central kitchen and laundry, a new central dining hall, and an isolation pavilion (for 32 patients and staff). The new water-supply from the mountains had been of great value. Fourth-year medical students from Beirût continued to attend for clinical demonstrations, and a course of lectures on mental nursing was being given to senior students of the College of Nursing, with practical demonstrations in the wards of the hospital. During the year 188 patients had been admitted (130 men, 58 women), making a total of 461 under treatment; 115 patients had been discharged, and of these 52 were recovered, 30 relieved, 27 not improved, 6 not insane. There had been 29 deaths. The patients came from all over the Near East and were mainly native to those parts, but sometimes persons temporarily resident in the country. The most frequent type of disorder was the schizophrenic reaction (77) and next the affective reaction (38).

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
Wednesday, June 5th.
Surgery. Provincial Meeting in Cardiff.
History of Medicine.—5 P.M., Dr. J. D. Comrie: Eighteenth Century English Medicine.

BIOCHEMICAL SOCIETY.
Friday, June 7th.—2.30 P.M. (Department of Medical Chemistry, University of Edinburgh), Short Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
Monday, June 3rd.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Surgical and Gynæcological Wards, Eye and Gynæcological Clinics. 4.15 P.M., Mr. Green-Armytage: Pelvic Ruptures.
Tuesday.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic. 4.15 P.M., Dr. Redvers Ironside: Diseases of the Sympathetic Nervous System.
Wednesday.—10 A.M., Medical and Children's Wards, Children's Clinic. 2 P.M., Eye Clinic, Gynæcological Operations.
Thursday.—10 A.M., Neurological and Gynæcological Clinics. Noon, Fracture Clinic. 2 P.M., Genito-urinary and Eye Clinics. 3.45 P.M., Venereal Diseases.
Friday.—10 A.M., Skin Clinic. Noon, Lecture on Treatment. 2 P.M., Throat Clinic.
Saturday.—10 A.M., Surgical and Children's Clinics, Medical Wards.
Daily at 2 P.M., Operations, Medical and Surgical Clinics.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
Wednesday, June 5th.—4 P.M. (St. James' Hospital, Ouseley-road, Balham, S.W.), Dr. C. E. Lakin: Demonstration of Medical Cases.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C.
Thursday, June 6th.—5 P.M., Dr. James Rishworth and Dr. Agnes Moncrieff: Homœopathy in General Practice. Dr. N. H. Hatfield: A Beginner's Difficulties.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
Thursday, June 6th.—2 P.M., Mr. A. Simpson-Smith: Clinical Cases. 3 P.M., Dr. A. Signy: Typing of Organisms and Tests of Virulence.
Out-patient Clinics daily at 10 A.M. and Ward Visits (except on Wednesday) at 2 P.M.

ROYAL INSTITUTE OF PUBLIC HEALTH AND THE INSTITUTE OF HYGIENE.
Tuesday, June 4th, to Sunday.—Health Congress at Harrogate.

INSTITUTE OF CHILD PSYCHOLOGY.
Wednesday, June 5th.—6.15 P.M. (Friends House, Euston-road, N.W.), Dr. Margaret Lowenfeld: Play in Childhood. 8.15 P.M., Dr. Hazel Chodak Gregory: The Place of Habit in Development.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.
Thursday, June 6th.—5 P.M., Sir Henry Dale, F.R.S. The Active Substances in Ergot: a Thirty Years' Review.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.
Wednesday, June 5th.—3 P.M., Dr. H. Crichton-Miller: Alcoholism and Drug Addictions. 4.30 P.M., Dr. Cedric Shaw: Fatigue States.

CHADWICK LECTURE.
Thursday, June 6th.—5 P.M. (The Chelsea Physic Garden, Swan-walk, S.W.), Sir John Russell, F.R.S.: Modern Changes in Food Production.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.
Sunday, June 2nd.—10.30 A.M. (Newcastle General Hospital), Mr. A. Logan: Surgical Cases.

UNIVERSITY OF BIRMINGHAM.
Tuesday, June 4th.—3.30 P.M. (General Hospital), Dr. B. C. Tate: Demonstration of Skin Cases.
Friday.—3.30 P.M. (Queen's Hospital), Prof. Philip Cloake: Circulatory Disorders of the Extremities.

ROYAL INFIRMARY, Manchester.
Tuesday, June 4th.—4.15 P.M., Mr. W. M. Sutherland: Carcinoma of the Colon.

Appointments

Dalton, H. W., M.B. Dub., has been appointed Junior Assistant Pathologist to the Royal Infirmary, Sheffield.

Denny-Brown, D., M.B. N.Z., M.R.C.P. Lond., Consulting Neurologist to the Royal Hospital and Home for Incurables, Putney.

Gillespie, N. A., B.M. Oxon., Hon. Anæsthetist to the Princess Beatrice Hospital, London.

Hudson, M. W. P., M.B. Lond., Hon. Anæsthetist to the Princess Beatrice Hospital, London.

Lightwood, R. C., M.D., M.R.C.P. Lond., Hon. Physician for Diseases of Children to the Bolingbroke Hospital, London.

Roth, P. B., M.B. Aberd., F.R.C.S. Eng., Hon. Orthopædic Surgeon to the Burslem Haywood and Turnstall War Memorial Hospital.

Wiles, Philip, M.S. Lond., F.R.C.S. Eng., Assistant Orthopædic Surgeon to the Middlesex Hospital.

Williams, Bryan, M.D., F.R.C.S. Edin., M.C.O.G., Hon. Obstetric Physician to the Sussex Maternity and Women's Hospital, Brighton.

Certifying Surgeons under the Factory and Workshop Acts: Dr. F. Hunter (Turriff District, Aberdeenshire); Dr. H. G. McPherson (Stonehaven District, Kincardineshire); Dr. T. A. Shaw (Stromness District, Orkney); Dr. J. H. Wardrop (Ellon, Aberdeenshire); Dr. J. A. Screech (Twickenham, Middlesex); and Dr. Beatrice M. Sellar (Aberlour, Banffshire).

London County Council Hospital Service.—The following appointments are announced:—

Anderson, J. S., M.D. Aberd., D.P.H., Medical Superintendent, Grove Hospital;

Morris, A. D., M.D. Brussels, Medical Superintendent, St. Leonard's Hospital; and

McKee, G. K., F.R.C.S. Eng., Senior Assistant Medical Officer, Grade II., St. Luke's, Lowestoft.

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hospital.—H.S. £150.

Albert Dock Hospital, Connaught-road, S.E.—Res. M.O. At rate of £110.

Barnsley, Beckett Hospital and Dispensary.—H.P. £200.

Barnstaple, North Devon Infirmary.—Res. M.O. £150.

Bath Royal United Hospital.—H.P. £150.

Bedford County Hospital.—First and Second H.S. At rate of £155 and £150 respectively.

Belfast, Queen's University.—Tutor in Obstetrics. £200.

Belfast, Royal Maternity Hospital.—Res. H.S. At rate of £50.

Birmingham, Imperial Chemical Industries, Limited.—Asst. M.O. £500.

Birmingham, Selly Oak Hospital.—Res. Physician. £650.

Birmingham and Midland Hospital for Women.—H.S. At rate of £100.

Blackburn Royal Infirmary.—Res. H.S. and Cas. O. At rate of £175 and £150 respectively.

Bradford Royal Eye and Ear Hospital.—H.S. £160.

Brighton, Sussex Eye Hospital.—Hon. Clin. Asst.

Bristol p in Physiology. £400.

Bucks . County M.O. and M.O.H. £800.

Cancer , *S.W.*—H.S. At rate of £100.

Canterbury, Kent and Canterbury Hospital.—Two H.S.'s. Each at rate of £125.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Two Hon. Assts. for Out-patient Dept.

Charing Cross Hospital, W.C.—Asst. Physician.

Chesterfield and North Derbyshire Royal Hospital.—Cas. O. Also H.S. to Ear, Nose, and Throat Dept. At rate of £200 and £150 respectively.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

City of Lo *oad, E.*—Asst. M.O. £250.

Connaught *E.*—H.S. At rate of £100.

Croydon M *ham.*—Med. Supt. £1100.

Derby, Bretby Hall, Orthopædic Hospital, near Burton-on-Trent. Locum Res. Asst. M.O. At rate of £350.

Doncaster Royal Infirmary.—H.S. to Eye, Ear, Nose, and Throat Dept. £175.

Dorchester, Dorset County Hospital.—H.S. At rate of £160.

Downpatrick, Down Mental Hospital.—Res. Med. Supt. £800. Also Asst. M.O. £350.

Dreadnought Hospital, Greenwich.—Hon. Gynæcologist. Also H.P. and H.S. Each at rate of £110.

Dudley Guest Hospital.—Hon. Physician and Hon. Surgeon.

Dulwich Hospital, S.E.—H.P. At rate of £120.

Essex C.C. Oldchurch Hospital, Romford, &c.—Asst. M.O. £600.

Gateshead Mental Hosp.—Med. Supt. £800. Also Asst. M.O. £400.

General Post Office, Headquarters Medical Branch.—A.M.O. £500.

Hartlepools Hospital.—H.S. At rate of £150.

Hertford County Hospital.—Sen. H.S. Also H.S. At rate of £200 and £180 respectively.

Hospital for Tropical Diseases, Gordon-street, W.C.—Two H.P.'s. Each at rate of £120.

Hospital for Women, Soho-sq., W.—Res. M.O. At rate of £100.

Hull Municipal Maternity Home and Infants' Hospital.—Jun. Res. M.O. At rate of £100.

Indian Medical Service.—Commissions.

Jersey General Hospital and Poor Law Infirmary.—Res. M.O. £100–£200.

Keighley and District Victoria Hosp.—Res. M.O. At rate of £180.

King's College Hospital, Denmark Hill, S.E.—Asst. Physician.

Leeds City Hospital for Infectious Disease.—Med. Supt. £810.

Leeds Hospital for Women.—Hon. Anæsthetist.

Leicestershire and Rutland Mental Hospital, Narborough.—Asst. M.O. £350.

L.C.C.—Jun. M.O.'s. £7 a week. Also Temporary District M.O.'s. At rate of £175.

Liverpool, David Lewis Northern Hospital.—Cas. O. and H.S. £120 and £80 respectively.

London University.—Laura de Salleeto Studentship. £150. Also University Readership in Surgery. £800.

Macclesfield General Infirmary.—Second H.S. At rate of £150.

Manchester, St. Mary's Hospitals.—Two H.S.'s for Whitworth-street West Hospital. Also Two H.S.'s for Whitworth Park Hospital. Each at rate of £50.

Mid-Wales Counties Mental Hospital, Talgarth, Breconshire.—Asst. M.O. £400.

National Temperance Hospital, Hampstead-road, N.W.—Cas. O. and H.P. At rate of £120 and £100 respectively.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Two Med. Regs. Each £250.

Northampton, County Mental Hospital, Berrywood.—Med. Supt. £900.

Oldham Royal Infirmary.—H.S. At rate of £175.

Plymouth, Prince of Wales's Hospital.—H.P., Res. Anæsthetist. Also H.S. to Spec. Depts. Each at rate of £120.

Princess Elizabeth of York Hospital for Children, E.—H.P. and H.S. Each at rate of £125.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S. At rate of £100.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Registrar. 20 guineas.

Queen Mary's Hospital for the East End, E.—Res. M.O. and Two Cas. O.'s. Each £150. Also Two H.S.'s, H.P., Obstet. H.S., and Res. Anæsthetist. Each £120.

Royal College of Physicians of London.—Leverhulme Research Scholarship. £500.

Royal Masonic Hospital, Ravenscourt Park, W.—Res. Surg. O. At rate of £250.

Royal Northern Hospital, Holloway, N.—H.S. and H.P. Each at rate of £70.

Ryde, Royal Isle of Wight County Hospital.—Res. H.S. At rate of £180.

St. David's Hospital, Silver-street, N.—Temp. Visiting M.O. At rate of £250.

St. Mary's Hospital for Women and Children, Plaistow, E.—Pathologist. £200.

St. Nicholas Hospital, Plumstead, S.E.—Temp. Asst. M.O. At rate of £250.

St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—Clin. Assts. to Hon. Staff.

Salford Royal Hospital.—Two H.S.'s. Each at rate of £125.

Salisbury General Infirmary.—Res. M.O. £250.

Salvation Army, Mother's Hospital, Lower Clapton-road, N.—Two Jun. Res. M.O.'s. At rate of £80.

Samaritan Free Hospital for Women, Hon. Surgeon to Out-patients. A

Sheffield Royal Infirmary.—Two H.S. H.S. Also Asst. Cas. O. Each at rate of £80.

£600.

sst. M.O. £300.

At rate of £200.

Stockport Infirmary.—Res. Surg. O. £250.

Stoke-on-Trent, Longton Hospital.—H.S. £160.

Stretford Memorial Hospital.—Surgical Asst. 50 guineas.

Surrey County Council.—Two Asst. M.O.'s. Each £600.

Swindon and North Wilts Victoria Hosp.—Visiting Radiologist.

Warwick, King Edward VII. Memorial Sanatorium, Hertford-hill. Jun. Asst. M.O. At rate of £200.

West Bromwich and District General Hospital.—H.P. At rate of £200.

West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.

West London Hospital, Hammersmith-road, W.—Chief Clin. Asst. in X Ray Dept. £125. Cas. O. £250. Also H.P. and 2 H.S.'s. Each at rate of £100.

West Riding Mental Hospital, Wakefield.—Fifth Asst. M.O. £350.

Weston-super-Mare General Hospital.—Res. H.P. £150.

Willesden General Hospital, Harlesden-road, N.W.—Res. Cas. O. At rate of £100.

Windsor, King Edward VII Hospital.—Reg. M.O. £150.

Wolverhampton Royal Hospital.—H.S. At rate of £100.

Worksop, Victoria Hospital.—Sen. H.S. At rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Bury St. Edmunds (Suffolk) and Wainfleet (Lincolnshire).

Births, Marriages, and Deaths

BIRTHS

Birch.—On May 24th, at Liverpool, to Marjorie (née Bold), wife of C. Allan Birch, M.D., M.R.C.P., of a son.

Cursham.—On May 19th, at a Norwich nursing-home, the wife of Anthony Cursham, M.R.C.S. Eng., of a daughter.

DEATHS

Bevan.—On May 22nd, Richard Bevan, M.R.C.S. Eng., D.P.H., of East Sheen, S.W., aged 81.

Floyd.—On May 22nd, at Bournemouth, Stephen George Floyd, M.D. Lond., late of Grays, Essex, in his 68th year.

James.—On May 20th, at Cadmore End, Bucks, Walter Culver James, M.D. Aberd., F.R.C.S. Edin., late Surg. Colonel H.A.C.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Prevention of the Common Cold.—The suggestion made by "A London G.P." that thyroid extract may reduce the susceptibility to the common cold has reached a layman, who writes: "About fifteen years ago I had a breakdown in health, and a well-known London physician in Wimpole-street (who died a few months ago) prescribed, inter alia, gr. ¼ thyroid tabloids, one per diem. These I have taken from time to time and I have been free from colds. Before taking them I had colds rather frequently. It was not for these colds that I sought his advice."

NOTES, COMMENTS, AND ABSTRACTS

LIFE IN ABYSSINIA

MOST of us know about as little of Abyssinia as of Borneo, about which Dr. A. J. Copeland had something to tell us last week. A European woman dentist who practises in Addis Ababa writes of her own experience there in a German contemporary.[1] The vast majority of Abyssinians, Miss Dabbert says, live in round huts roofed with straw and without windows or chimneys. The walls are often defective, and through the cracks the cold night air penetrates. Adults and children sleep on straw mats or ox skins. The half-naked children, clad in rags, grow up in this primitive condition. Food consists chiefly of roast corn and a kind of cold pancake, with the occasional addition of a pepper sauce. There is no infant care and no idea of hygiene. The infant mortality is very high—about 50 per cent.—most of the deaths occurring in the first year. There is no family life, as marriages can be easily dissolved by either husband or wife without any legal complications; there are consequently no illegitimate children.

Through the mixture of races in Abyssinia there are many shades of skin colour, from light brown to the darkest ebony, but in spite of this nationalism is very strong, and is apparent in the dislike of European clothes and the love of the national dress. This consists of trousers, shirt, a kind of toga-like shawl of thin white cotton with a coloured border and a big wide brimmed hat. Soap is unknown, and the seeds of a plant called "Endott" are used instead. They are very effective. If water is handy the Abyssinian washes face and hands every morning and even the poorest peasant washes before and after meals. The feet are washed at night, especially between the toes to get rid of the jiggers. Bathing, especially in the hot springs with which the country is so well endowed, is indulged in frequently. The most famous of these springs is "Fel-Oha" at the capital Addis Ababa and the water comes from it boiling hot. There is a radioactive hot spring, good for rheumatism, at Errer Gotha, and a hot spring at Ambo also good for this complaint. There are special baths for hysteria and nervous diseases.

Though there are six big hospitals, several dispensaries and about 30 European doctors in the capital, the native healers have the confidence of the people, who will often return to them after having been successfully treated by Europeans. Miss Dabbert describes the methods used by native practitioners. Venereal disease is treated by secret remedies in which mercury plays the chief part. Cupping is carried out with an ox horn; the air and a definite quantity of blood is sucked up forcibly by the operator. Cauterization of the skin with a hot iron is widely used for the relief of pain. Most of the native remedies are herbal; decoctions, powders, and poultices made up from simple dried powders. There is here, she thinks, scope for research by pharmacologists. Superstition plays a large part in the preparation of their remedies. The plants have to be collected at a certain time of the day or night, and must be prepared and given in a secret manner. Cusso, the flower of a beautiful tree dried and made into a paste with water, is given for tape worms; the taste is very unpleasant and it often causes death from enteritis. Natives react quickly to drugs, and even severe wounds heal in a short time. Vaccination is practised, but with pus taken from a small-pox case. Circumcision is done by the priests 10 to 15 days after birth, and is very primitive. Leprosy is widespread; the natives have no remedy for this. There are two leper colonies, one organised by Franciscan monks and nuns, the other, very efficiently, by Americans.

Professional begging is rife, and compassion solicited for such ills as leprosy, elephantiasis and deformities.

At Addis Ababa, which is 8000 feet above sea level, pneumonia does badly and chronic lung cases do well. Typhus occurs in epidemics, worse in the rainy season. Tick fever also gives trouble in the rainy season. Typhoid is prevalent when the water begins to rise in the wells.

The Abyssinian government has started a network of hospitals throughout the country. There are also Catholic and Protestant medical missions. In the last ten years cultural progress has been rapid. The Abyssinians—or as they prefer to be called, the Ethiopians—are an energetic people, and it is, Miss Dabbert concludes, only a question of time for a proper organisation of medical services to be developed.

DR. J. H. WATSON

THE current number of *King's College Hospital Gazette* contains an amusing lecture delivered to the Listerian Society of the hospital by Mr. Ivor Back upon the personality of "my dear Watson," the companion and Boswell of Sherlock Holmes. And the actual introduction of Watson to Sherlock Holmes has been compared by a previous writer to that effected by Thomas Davies, the ex-actor and Covent Garden bookseller, of Boswell to Johnson. By industrious and ingenious extractions from the various publications dealing with the exploits of Sherlock Holmes, Mr. Back has been able to construct an accurate account of Dr. Watson, so that in regard to his medical school, the dates of his qualifications, and his tenure of appointments a paragraph suitable for insertion in the Medical Directory could be made, while out of other personal details as to his gallantry in the field, foreign travel, and marriages, a very readable autobiography for "Who's Who" could be constructed. Doubt, however, remains as to Dr. Watson's Christian names, which he would have removed had he corrected proofs for either of those valuable books of reference; in one story he is called John, and in another his first wife alludes to him as James, while the implication of "H" remains concealed. It would seem that Watson was an essentially modest man, for he certainly, as Holmes's biographer, wrote himself down as an ass, while Mr. Back makes of him, through documentary evidence, a brave man and a competent doctor.

BIDLOO AND COWPER

IN the March issue of the Annals of Medical History[1] there is an interesting essay by Dr. Fenwick Beekman, of New York, on systems of anatomy published at the end of the seventeenth century by Godfried Bidloo and William Cowper, in which the question of plagiarism by the latter is discussed in some detail. Bidloo, a Dutch anatomist, was born in 1649 and wrote his "Anatomia Humani Corporis" when he was about 36 years of age. In 1688 he became professor of anatomy at the Hague and came to England after the accession to the throne of William of Orange. The King consulted him with regard to his health when the Dutchman differed strongly from the English physicians who were also called into consultation. The King seems to have believed in his own countryman, for Bidloo was appointed general superintendent of civil and military hospitals in Holland, but on taking up office he got into trouble in connexion with the caricatures of certain judges. He was imprisoned but released at the instance of William and in 1693 was back in England where he was appointed inspector of military hospitals. In the following year he returned to Holland as professor of anatomy and surgery at Leyden, but being in constant attendance on William III. he neglected his professorial duties. We gather from Dr. Beekman's account of him that he was a difficult man, but he certainly was placed in difficult positions. His treatise on anatomy was recognised as valuable and it was illustrated in accordance with the grand but rather inaccurate manner of the time. The drawings are attributed to Gerard de Lairesse, and from them the trouble arose.

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[1] Deut. med. Woch., April 26th, May 3rd, and 10th, 1935, pp. 682, 719, and 766.

[1] New York: Paul B. Hoeber, Inc. $2.50.

William Cowper, an English surgeon, was born 17 years later than Bidloo, and the first edition of his book "Anatomy of the Human Body" was published in 1698, by which time he was a well-known practitioner. This book was an advance on Bidloo's and in England was recognised at once as a standard work. But immediately on its publication arose a fierce quarrel as to whether and how much Cowper had plagiarised from Bidloo. Dr. Beekman discusses the charge with great detail and makes it clear that while Cowper may have been a superior man of science and a more original observer, he none the less made an unfair use of Bidloo's plates, and certainly he put up in defence of his actions a very thin explanation. The question of plagiarism to the ordinary observer would seem to be settled by looking at the title-page to Bidloo's work and the title-page to the work by Cowper; reproductions of these allegorical designs are supplied by Dr. Beekman and no one can doubt that the later one was copied from the earlier.

VITAMIN A IN FISH LIVER OIL

CONFLICTING statements in connexion with halibut liver oil are dealt with in a circular which we have received from the Crookes Laboratories (British Colloids Ltd.), Park Royal, London, N.W. The circular explains the procedure for the accurate determination of vitamin A in oils, and has been written to meet embarrassments of medical men who wish to understand the results of contradictory assays. Taking the standpoint of being pioneers in the field, the circular from the Crookes Laboratories describes the advantages and disadvantages of the different methods now in use for such determination and the reason for adopting a particular one.

The methods described are (1) blue test, (2) spectrographic, (3) vitameter, and (4) biological, and the advantages, disadvantages, and standards of accuracy obtained are set out in tabular form for each method. Since all the methods measure the amount of vitamin A present in the oil, they can be correlated in the case of halibut liver oil, and the relationship between them is shown as follows:

	Per cent. vitamin A	1
(1)	Blue units (C.P. 20 per cent.) ..	800
(2) (3)	$E^{1\text{ per cent.}}_{1\text{ cm.}}$	16
(4)	Biological international growth units	25,000

The circular states that in practice oils are evaluated by either the blue test or the vitameter method with an occasional check by the biological method, but the spectrographic method is held to give greater accuracy—an argument for the replacing by it of the blue or Carr-Price test as far as the Crookes Laboratories are concerned. But the value under the Carr-Price method corresponding to the vitamin content will be quoted from the laboratories for a limited time, future determinations being carried out by, and guarantees being based on, the spectrographic method.

Crookes halibut liver oil is stated to be available in various forms, all of which are issued with a certificate as to vitamin potency. They include collosol halibut liver oil (as drops and capsules). Halimalt, a blend of oil with malt extract and orange juice made palatable for children; Halycitrol, in which glucose takes the place of the malt extract in Halimalt; and Halycalcyne, where calcium phosphate is added to the oil, and regarded as a prophylactic, while indicated in conditions of calcium deficiency.

MEDICAL PIONEERS OF MOTORING

IN a recent obituary notice of Mr. F. W. Ramsay, who died at Bournemouth in his 73rd year, he was described as a pioneer motorist, and a founder member of the Royal Automobile Club. The final instalment in *St. Bartholomew's Hospital Journal* for May of Mr. E. C. O. Jewesbury's entertaining biography of Charles Barrett Lockwood recalls him as another pioneer motorist. Lockwood was the first member of the Bart.'s staff to drive himself to hospital in his own car. The machine was a Panhard with tube-ignition, painted a bright scarlet, and it was a disappointment to students that it was not driven into the hospital square, but always left outside in Smithfield—desirable, no doubt, in view of the disturbance to patients likely to result from the preliminaries to its departure. A delightful picture of this machine, reproduced from a photograph belonging to Sir Archibald Garrod, appears in the article. It was known by students as "The red peril." Mr. Jewesbury tells a story of Lockwood getting into trouble with the police near Chancery Lane, and in consequence arriving late in his ward. "Are there any policemen in here?" he demanded. "Three," he was told, and they were almost ready to go. "Discharge them," he said. Lockwood had the sagacity to see what value the motor-car would be to the medical profession and in 1906 he became chairman of a "committee of medical men who are users of motor-cars."

QUINS

A CORRESPONDENT writes: "The acquisition of speed at any price seems to-day to be the ruling motive; clipped words, and initials as substitutes for titles, or as implying whole conditions or sentiments, not only are frequent in speech but are increasingly appearing in serious literature, a saving of time for speaker, reader, and writer being the common motive. The Dionne quintuplets born in Ontario in the middle of 1934 have received their meed of publicity from you, and I learn from various newspapers that they are alive, and that the record of their activities affords plenty of copy, while they are now referred to as 'The Quins.' We must evidently get used to a new world of abbreviations. It may be necessary to realise that when the mid comes she may assist into the world trips and quads; that the amb takes the pat to the hosp where the surg ops on him; that the doc gives the panpat a scrip which he takes to the chem, who puts the med in a bot and says OK nix to pay. It is all going to be very difficult for those not bred up in modern hurry."

MEDICAL FILMS

DR. BERNARD KAPLAN writes:—Medical men who are amateur cinematographers may be interested to learn that the Institute of Amateur Cinematographers has established a section devoted to medical and allied subjects. The Institute will be pleased to receive films for classification and criticism, and helpful advice will be offered, if desired, on the technical or other aspects of the subject. Where applicable, copies of original films will be made for circulation amongst medical men and medical bodies, and it is hoped that a useful and instructional library may be built up. Foreign workers have intimated their interest in this branch of the Institute's activities, and their observations and pictorial records should be of the utmost value. The films comprising this library will be under the control of a medical man, and due care will be taken of all those entrusted to the Institute. I must emphasise that no charge is made, either for help, or to those interested in the viewing and showing of these films. It is felt that the services offered will ensure that films made by individual workers will receive attention and recognition. Films and communications should be addressed to me, c/o The Institute of Amateur Cinematographers, Burley House, Theobald's-road, London, W.C. 1.

ERRATUM.—*In some of the copies of* THE LANCET *last week the figures in Mr. Green-Armytage's statement on p. 1255, col. 1, that 3 ounces of fresh protein contains 7 grains of calcium were transposed.*

ADDRESSES AND ORIGINAL ARTICLES

LATE RESULTS OF THE OPERATIVE TREATMENT OF OSTEO-ARTHRITIS OF THE HIP-JOINT[*]

Y C. Max Page, D.S.O.; M.S. Lond., F.R.C.S. Eng.

DIRECTOR OF THE SURGICAL UNIT, ST. THOMAS'S HOSPITAL; SURGEON TO VICTORIA HOSPITAL FOR CHILDREN; CONSULTING SURGEON TO METROPOLITAN POLICE

It is only during the past ten years or so that urgery has taken an active part in the treatment f chronic non-tuberculous arthritis, a condition enerally termed in England osteo-arthritis. The process is essentially a chronic one and is induced by various factors by no means always ascertainable. On this account, especially in its early stages, the physician, physicotherapeutist, or often the quack apply different remedies according to their individual convictions in an attempt to control the disease. With the development of asepsis and the stimulus given by radiology—both by its provision of more exact diagnosis of the joint condition and its assistance n the checking of operative procedures, surgery has gradually taken a greater share in treating advanced cases.

In dealing with the disease in its localised form operative measures have achieved a considerable success, but it cannot be said yet that opinion is unanimous as to the methods which should be applied to one of the major weight-bearing joints, the hip. I propose therefore to investigate this problem with the help of the literature and the analysis of a group of some 100 cases upon which I have operated during the past fifteen years.

Pathology

It may be well in the first place to make an attempt to define the nature and development of the various conditions met with in the pathological rubbish heap called chronic arthritis. There is much confusion in the nomenclature of the subject which may be accepted as an index of our ignorance of the exact pathology of the various conditions concerned. The term osteo-arthritis is in this country applied to joint conditions in which the final morbid anatomy is easily recognisable. On the Continent the term arthritis deformans is more often employed in the same sense, and American authors generally classify the condition under the general term chronic non-specific arthritis, subdividing it into proliferative, degenerative, and atrophic groups.

The factors which are recognised as associated with the development of the disease may be tabulated as follows :—

LOCAL CAUSES

1. Previous trauma—old fractures, particularly those involving the articular surface.
2. Nutritional diseases of bone in childhood—Perthes and perhaps slipped epiphysis.
3. Congenital deformities and dislocations.
4. Upsets in the blood-supply to the articular area—osteochondritis dissecans.
5. Subacute infection of the joint.

GENERAL CAUSES

1. Circulation in the blood stream of toxic materials derived from closed septic foci or the intestinal tract.
2. Interference with the nerve-supply to the articular surfaces.

EXPERIMENTAL EVIDENCE

The determining causes which initiate the pathological sequence—partly degenerative and partly proliferative—which lead to the progressive joint changes, are not yet fully understood ; and it must be admitted that many different conditions and processes may lead to joint changes which are indistinguishable in their final form.

Generalising our views on the subject, it may be said that given a hip-joint in which the nutrition of the joint surfaces has been upset by epiphyseal disease, trauma, or infection, some undetermined factor may initiate the slowly progressive changes which we recognise as osteo-arthritis. The factor may be a circulating toxin developed in an infective focus ; it may be some chemical produced as a result of some upset in metabolism or endocrine disturbance.

The ultimate condition of the hip which we classify as osteo-arthritis is characterised by the absorption of the articular cartilage, the secondary sclerosis of the underlying bone associated with the formation of cysts together with marginal hypertrophy. Hypertrophy of the synovial membrane, small-celled infiltration of the capsule of the joint, and fibrosis of the surrounding muscles occur in varying degrees, and it is often impossible to say how far these conditions are secondary to the progressive disintegration of the joint, or how far they represent the first step on the downward path. The changes may be predominantly in one joint and the hip is particularly prone to be the one involved, but a slighter grade of the same condition can generally be observed in other joints in the same patient. In some cases the nervous supply of the joint, either sensory or sympathetic, is at fault. Eloesser[1] has proved experimentally that anæsthesia produced in a limb by the section of the posterior nerve-roots does not itself produce the changes of osteo-arthritis in the affected limbs, but that such changes are initiated by trauma.

I may here refer to *rheumatoid arthritis*, which in its inception is essentially polyarthritic and associated with the phenomena of a subacute infective process. In its typical form it runs its course over several years generally leaving the patient severely crippled. In this final stage the joints may be dealt with surgically, though the multiplicity of the lesions is a great handicap to success. There are borderline cases between this infective condition and osteo-arthritis which are generally classified under the term atrophic arthritis. A certain number of these cases have been operated on and included in the series reviewed later.

Surgical aid in the form of positional treatment and the provision of apparatus for the protection of the joint have their place in quite early stages of the disease. Major operations will usually only be undertaken on the account of the presence of the two clear indications, pain referred to the joint and disabling deformity, either alone or in association. In certain cases—e.g., ankylosis or stiffness of both hips may justify a surgical attempt to restore movement.

Before deciding on the surgical treatment in any individual case, an attempt should be made to localise the source of the pain as it may have considerable influence on the choice of method.

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[*] A Hunterian lecture delivered before the Royal College of Surgeons of England on Feb. 8th, 1935.

ANALYSIS OF PAIN

The pain of arthritis may be due to irritation of the nerves underlying the articular cartilage. This pain is most in evidence in the early stages of the disease, and I think passes off when the articular cartilage has been completely eroded and the underlying bone has become sclerosed. It would appear that in the stage of erosion of the hip cartilage pain is often referred to the knee. Pain from the joint capsule is present when there is infiltration of the capsule with exudate or stretching of it from progressive displacement of the femoral head. Muscle pain is noticeable when there is much deformity associated with spasm, and is seldom entirely absent till the joint is stabilised either from a termination of active disease or by the immobilisation of the joint. Various degrees of sciatica are common, and in the more severe cases may be due to a definite neuritis. The sciatic pain is, however, usually regarded as due to referred pain from the hip-joint.

It may be noted that the degree of pain is not determinable by reference to the bony deformity. One sees cases of bilateral hypertrophic arthritis of both hips in which one joint is practically painless and the other joint, showing a similar radiogram, acutely painful. Again, capsular or muscular pain may be present in instances in which the joint surfaces are radiologically not far from normal.

In actual practice a clear recognition of the origin of the pain is often only possible by means of trial and error in methods of treatment, but if the evidence is at all clear it may help in deciding what physical or surgical procedure may be most effective in giving relief. It is assumed that physicotherapeutic measures have been tried and proved ineffective before the surgeon is called in. Of these measures the one which has given the most noteworthy results is deep X ray therapy. The application of this agent is fairly recent, and its action in relation to these cases is not understood, but its efficiency in a percentage of cases is striking. Dausset and Lucy [2] quote the results they have obtained in 50 cases and state a definite improvement was observed in half of the patients treated, and that the improvement continued for periods up to two years. They are not able to define the joint conditions which determine the success or failure of the method. Watt [3] reports an even higher percentage of satisfactory results from this method of treatment in early cases of arthritis. His conclusions are not based only on hip-joint, but he states that the results in long-standing cases are less satisfactory.

DEFORMITY

The deformity constantly observed in this disease is flexion and adduction of the thigh. It may be caused by muscle spasm, but occasionally is assisted in its development by subluxation of the joint. Secondary lordosis and lateral curve of the spine are produced when the patient assumes the erect attitude. The strain so imposed on the sacro-iliac and lumbar spine joints may be the source of pain apart from any arthritic change in these joints.

Surgical Methods

I will now consider the various types of surgical treatment which are at present in vogue.

Procedures directed to correct malposition of the joint, which develops in the course of the disease and which may be the source of pain as well as disability, may be referred to as coming under the classification of surgical treatment. Under this heading come manipulation of the joint and stretching of the adductors, associated or not with section of their tendons. The limb is then immobilised in plaster for a month or so in the corrected position. Subsequently a weight-relieving calliper may be worn for a few months in order to prevent recurrence of the deformity and as far as possible to save wear and tear of the joint surfaces. The length of time the calliper is worn will usually be determined by the patient, in as far as he finds the relief afforded outweighs the encumbrance of the apparatus.

In Scandinavia Camitz [4] is an advocate of this type of treatment, and he effectually prevents recurrence of adductor deformity by resecting the obturator nerve and part of the pectineus muscle on the affected side. He advocates subsequent fixation for only two weeks and follows this up with a long course of physicotherapeutic treatment.

In describing his method he gives details of 7 out of 50 cases operated on during the last ten years, in most of which satisfactory relief of pain and return of function were obtained.

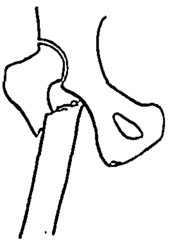


FIG. 1.—Tracing of radiogram after bifurcation osteotomy of femur (after Hass).

Osteotomy of the neck of the femur is based on the similar idea, that of restoring the natural line of stress to a deformed joint. A simple subtrochanteric osteotomy may be practised or the bifurcative operation (Shanz, Lorenz) carried out. The latter procedure aims at more than reposition of the limb, as by abutting the cut lower end of the femur on the subacetabular rim weight is no longer passed through the hip-joint. (Fig. 1.) Hass [5] is a strong advocate of this latter measure.

The first recorded radical surgical attack on the hip, the seat of osteo-arthritis, was by an excision of the head carried out by H. Foch [6] in 1857. Though further isolated attempts at surgical treatment are recorded, it was not until Albee [7] introduced his arthrodesing operation in 1908 that any material progress was registered in attacking the problem by surgical methods. Albee has used his method in a large number of cases. He later introduced the use of a bone graft in order to secure bony fusion with greater certainty. He is well satisfied with arthrodesis carried out by his methods and has operated on a large number of cases; detailed reports of late results do not appear to be available.

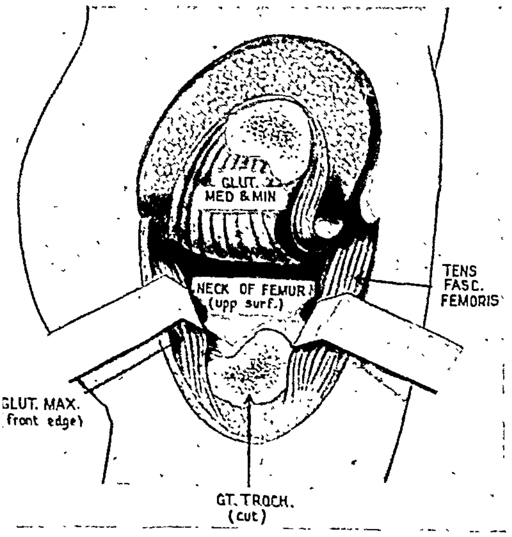
Whitman [8] advocated his reconstruction operation for the relief of the condition in 1925; the aim of this procedure is to obtain a movable joint after removing as far as possible abnormal bone. He pins his faith to this operation for the condition in question.

To judge by the literature, the last five years has seen a great increase in the surgical interest in the treatment of osteo-arthritis of the hip in France. In addition to arthrodesing operations and arthroplastic resections the buttress operation of Lance seems to have gained a considerable vogue. It consists in the establishment of a bony block above the joint to prevent progressive dislocation. The application of this operation would appear to be limited to cases in which subluxation is the prominent factor. It does not attack the joint surfaces and so cannot be expected to bring the disease process to an end.

Another operation of Gallic origin is the recently introduced "forage du col," by Duvernay and tson-Lavalle.[9] The procedure was founded idea that the nutrition of the head of the femur ourably influenced by driving a bone graft into bstance. A track is drilled through the great nter into the neck and head of the bone without ng the joint. Some authors drive a graft the track; others do not. The method has on trial for only a few years, and it is therefore ture to pass any judgment on it. On the f it, it would not seem likely to be more than orarily effective, whatever the basis of its action. ts on the value of "forage du col" are made vernay,[9] Rocher,[10] Arnaud and Cleret.[11] They ll favourably impressed by the method, but only a few recent cases.

eo and Rocher[11] surveyed the whole subject 32 without formulating any conclusions at the first Congress of the French Association of ons. Mathieu[12] gives a good account of the al position and quotes the results of 18 cases d in various ways. He states that of 8 attempted oplasties the results were good in 6 and unsatis- ry in 2. Tavernier,[11] after a trial of arthro- c resection in 8 cases, concludes that arthrodesis be preferred to any other form of surgical treat- . Roederer and Graffin[13] reserve arthrodesis xceptional cases and are impressed by the rtance and value of positional treatment after tomy. The buttress operation is reported on asmonteil[11] and others, but the consensus of on seems to limit the application to old cases bluxation of the joint.

att[14] discusses the relative value of resection the head and arthrodesis without any detail of material. He prefers an arthrodesis carried through a Murphy approach.



. 2.—Schematic drawing of Murphy approach to the hip-int, employed in 76 cases. Glut.=glutoreus muscles. Tens. sc. fem.=tensor fasciæ femoris. Gt. troch.=great trochanter.

he most recent English figures are reported by Bristow[15] who in an analysis of 67 cases rated on for osteo-arthritis compares the merits he reconstructive type of operation with arthro- is. He analyses the results of 33 cases in which e form of arthrodesis was aimed at and of 34 rations for arthroplastic reconstruction. His clusions favour arthrodesis for young to middle-aged patients in whom only one hip-joint is involved; he would reserve the attempt at arthroplasty for those in whom both hips or their major joints are involved, or for the aged.

The views of German surgeons are perhaps expressed by Burckhardt[16] in a painstaking compilation in the new German Surgery on Arthritis Deformans. He does not favour arthrodesis, but considers that more satisfactory results are obtained by one of the various remodelling operations.

Payr[17] considers the outlook in plastic operations on the hip good and states that 60 to 70 per cent. of these operations are successful. In old patients he prefers a saddle or bifurcation osteotomy. He seems to be impressed by the disadvantages of an arthrodesis and with the severity of the operation necessary to gain this end. He emphasises the importance of a mobile spine if an arthrodesis is to be satisfactory.

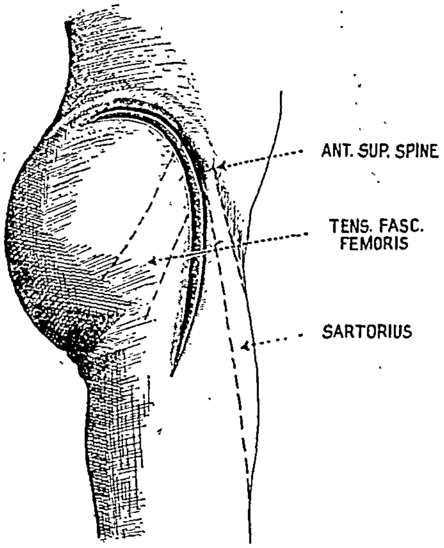


FIG. 3.—Diagram of skin incision for Smith Petersen approach to hip-joint.

Bergman[18] records a follow-up of Hildebrand's cases—the only late investigation of any weight which I can find in the German literature. A reconstruction operation had been carried out in all. Three deaths were attributed to the operation. Sixty cases had been operated on in 15 years, mostly aged between 40 and 60.

Of 11 cases reporting 4 were well pleased with the result, 5 said they were worse since the operation. Two of these latter cases were aged 24 and 32.

Of 17 examined 13 were improved and 4 unaltered or worse.

Among the 13 satisfactory cases the functional value of the hip-joint was as follows:—

Bony ankylosis	2
Slight movement	3
Useful movement	8

He states in conclusion that he prefers an arthrodesis for heavy weight-bearers, but prefers arthroplasty for others.

Analysis of Author's Cases

I will now turn to my own experience. During the past fifteen years I have operated on 112 cases for chronic non-tuberculous arthritis of the hip-joint. I propose to consider the late results of these operations. I have limited my investigation to the results of the two radical operations—viz., attempts at arthrodesis, attempts at arthroplasty. All the cases in the series had been subjected to longer or shorter courses of physicotherapy, and many to minor surgical interventions before radical operation was undertaken, but I am not in a position to consider the results of these procedures. Seventeen cases have been operated on since July, 1932, and I have considered the intervening period too short to render

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In actual practice a clear recognition of the origin of the pain is often only possible by means of trial and error in methods of treatment, but if the evidence is at all clear it may help in deciding what physical or surgical procedure may be most effective in giving relief. It is assumed that physicotherapeutic measures have been tried and proved ineffective before the surgeon is called in. Of these measures the one which has given the most noteworthy results is deep X ray therapy. The application of this agent is fairly recent, and its action in relation to these cases is not understood, but its efficiency in a percentage of cases is striking. Dausset and Lucy [2] quote the results they have obtained in 50 cases and state a definite improvement was observed in half of the patients treated, and that the improvement continued for periods up to two years. They are not able to define the joint conditions which determine the success or failure of the method. Watt [3] reports an even higher percentage of satisfactory results from this method of treatment in early cases of arthritis. His conclusions are not based only on hip-joint, but he states that the results in longstanding cases are less satisfactory.

DEFORMITY

The deformity constantly observed in this disease is flexion and adduction of the thigh. It may be caused by muscle spasm, but occasionally is assisted in its development by subluxation of the joint. Secondary lordosis and lateral curve of the spine are produced when the patient assumes the erect attitude. The strain so imposed on the sacro-iliac and lumbar spine joints may be the source of pain apart from any arthritic change in these joints.

Surgical Methods

I will now consider the various types of surgical treatment which are at present in vogue.

Procedures directed to correct malposition of the joint, which develops in the course of the disease and which may be the source of pain as well as disability, may be referred to as coming under the classification of surgical treatment. Under this heading come manipulation of the joint and stretching of the adductors, associated or not with section of their tendons. The limb is then immobilised in plaster for a month or so in the corrected position. Subsequently a weight-relieving calliper may be worn for a few months in order to prevent recurrence of the deformity and as far as possible to save wear and tear of the joint surfaces. The length of time the calliper is worn will usually be determined by the patient, in as far as he finds the relief afforded outweighs the encumbrance of the apparatus.

In Scandinavia Camitz [4] is an advocate of this type of treatment, and he effectually prevents recurrence of adductor deformity by resecting the obturator nerve and part of the pectineus muscle on the affected side. He advocates subsequent fixation for only two weeks and follows this up with a long course of physicotherapeutic treatment.

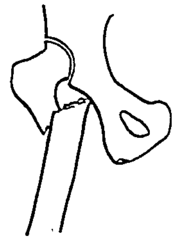


FIG. 1.—Tracing of radiogram after bifurcation osteotomy of femur (after Hass).

In describing his method he gives details of 7 out of 50 cases operated on during the last ten years, in most of which satisfactory relief of pain and return of function were obtained.

Osteotomy of the neck of the femur is based on the similar idea, that of restoring the natural line of stress to a deformed joint. A simple subtrochanteric osteotomy may be practised or the bifurcative operation (Shanz, Lorenz) carried out. The latter procedure aims at more than reposition of the limb, as by abutting the cut lower end of the femur on the subacetabular rim weight is no longer passed through the hip-joint. (Fig. 1.) Hass [5] is a strong advocate of this latter measure.

The first recorded radical surgical attack on the hip, the seat of osteo-arthritis, was by an excision of the head carried out by H. Foch [6] in 1857. Though further isolated attempts at surgical treatment are recorded, it was not until Albee [7] introduced his arthrodesing operation in 1908 that any material progress was registered in attacking the problem by surgical methods. Albee has used his method in a large number of cases. He later introduced the use of a bone graft in order to secure bony fusion with greater certainty. He is well satisfied with arthrodesis carried out by his methods and has operated on a large number of cases; detailed reports of late results do not appear to be available.

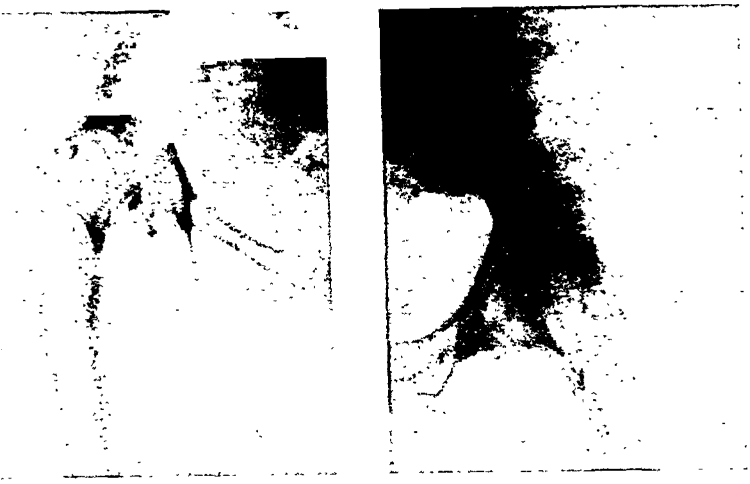
Whitman [8] advocated his reconstruction operation for the relief of the condition in 1925; the aim of this procedure is to obtain a movable joint after removing as far as possible abnormal bone. He pins his faith to this operation for the condition in question.

To judge by the literature, the last five years has seen a great increase in the surgical interest in the treatment of osteo-arthritis of the hip in France. In addition to arthrodesing operations and arthroplastic resections the buttress operation of Lance seems to have gained a considerable vogue. It consists in the establishment of a bony block above the joint to prevent progressive dislocation. The application of this operation would appear to be limited to cases in which subluxation is the prominent factor. It does not attack the joint surfaces and so cannot be expected to bring the disease process to an end.

Another operation of Gallic origin is the recently introduced "forage du col," by Duvernay and ro- deaths occurred while the patients in this s were in hospital. The details are as follows :—

se 1.—A man, aged 73, died of cellulitis of the wound h in itself was not very serious. At the post-mortem patient was found to have evidence of prostatic uction with a trabeculated bladder and small fibrous eys, and the cause of death was almost certainly nia. The blood-urea was not estimated before ation.

se 2.—A man, aged 69, who died shortly after operation at the post-mortem was found to have meningitis. uring life he developed post-operatively the clinical signs tetanus, but the diagnosis was never definitely tablished.



FIGS. 5 and 6.—Radiograms showing sound bony ankylosis.

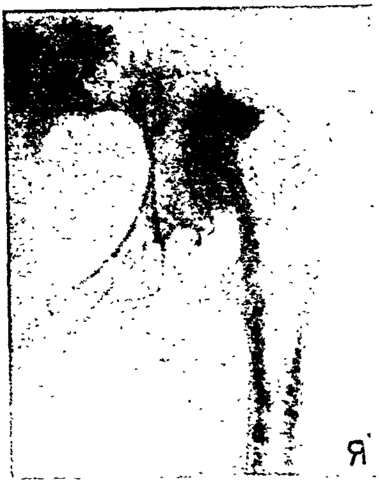


FIG. 7.—Radiograms showing fibrous joint and subluxation.

Age and sex of patients.—The average age of the atients operated on was 51 years. The oldest atient was 73 and the youngest 21. There were 3 males (13 army pensioners) and 33 females.

Complications during convalescence.—Pressure sores om the plaster spica were troublesome in a few cases nd sometimes have necessitated the use of a skeleton plint in place of the plaster. Wound hæmatoma as recorded in eight. With careful hæmostasis his should not occur, and I do not think drainage f these wounds is called for. The complication as been less frequent in my later cases since outine ligature of all bleeding points has been arried out. Bleeding from the bone in arthrodesis operations is not usually troublesome, but may be persistent.

Suppuration.—Secondary superficial suppuration in the posterior sector of the Murphy incision is common (ten cases). It does not interfere with the course of treatment. It is not common with a Smith Petersen incision. Deep suppuration is recorded in two cases and, as might be expected from the extent of the wound, is a serious matter. It necessitates transferring the patient to a skeleton splint. This makes positional control difficult. In one case (Case 94) an erysipelas developing three weeks after operation from a hæmatoma sinus led to a mild pyæmic state from which the patient was lucky to escape with his life.

Deep venous thrombosis is recorded nine times. It most often appeared in the left leg whichever side was operated on. It has not, as a rule, interfered with positional treatment, but it impedes the functional return of power in the limb and tends to intensify the post-operative stiffness of the knee on the affected side.

There was no case of severe pulmonary embolism in this series. One case with transient effects is recorded (Case 59).

Chest complications.—In opposition to the generally accepted idea that the elderly patient immobilised in plaster is particularly liable to bronchitis and hypostatic pneumonia this series does not confirm that view. No serious instance of pulmonary complications is recorded. It should be noted that a high plaster spica was never used.

Mental complications.—In the middle aged the shock of a big operation followed the sense of helplessness involved by plaster or splint fixation not infrequently leads to some mental upset. Most patients if put in the open and given reasonable doses of alcohol recover their equanimity in a few days. Four cases of mental trouble sufficiently severe to interfere with routine treatment are recorded in this series, but no patient was transferred to a mental hospital.

Interval between operation and restoration of function.—The time taken before the patient derives the maximum benefit varies in individual cases; for instance, there are men in this series who were back at work within eight months of operation and whose hips have stood the test of time very well indeed; there are others who state that they did not really settle down after operation for two years or more. There is no doubt that, provided the operation had relieved the pain, a patient who is able to coöperate will get walking and improve very much more rapidly than one in whom the "spirit is weak." In this connexion it is striking that several of the patients state that they did not really get going until they were discharged from the massage department and until they started to get about in their own homes. It seems therefore that the efforts in the massage and electrical departments should be devoted to overcoming the stiffness in the other joints, especially in the knee on the side of the operation, which stiffness occurs as the result of prolonged fixation in plaster, and also to establishing the efficiency of the muscles around the hip, since these muscles are usually wasted and atrophied, and consequently are inadequate to control the balance of the body, even in the end-results of any value, and so they have not been included in the Table.

An exact definition of the nature of the joint changes in the group investigated is not possible. Nearly all cases were advanced examples of osteo-arthritis and, as has been pointed out above, the recognisable pathology in the final state is the same whatever factors may have initiated the primary change. In the table giving details of the individual case it is stated whether the condition for which operation was undertaken was a hypertrophied or atrophic arthritis, and whether subluxation was present and how far the disease was monarticular.

The approach to the hip-joint employed in each case is stated in the main table. One of two recognised approaches have generally been used—viz., either based on Murphy's method (76 cases) or on the Smith Petersen[19] (15 cases). Irregular approaches were used five times. The Murphy approach has been employed exclusively when a reconstructive operation was carried out. The vertical part of this incision has only been made when the great trochanter has been planted below its normal situation. The approaches are sufficiently well known to render it unnecessary to describe them in detail. The Figs. 2, 3, and 4 delineate their essential features.

OPERATIONS AIMING AT ARTHRODESIS

In attempting an arthrodesis the joint has normally been dislocated—posteriorly after the Murphy approach, anteriorly after the Smith Petersen. The surface of the head of the femur has then been cut away till a shaped head of apparently healthy and vascular bone is left. The upper sector of the acetabular roof is next cut away with a large gouge. This is the only difficult part of the operation; it is by no means easy to expose well the vascularised bone in the acetabulum without destroying the shape of the cavity. The head of the femur is then replaced in the socket, a formal extra-articular iliac graft is only used exceptionally. The great trochanter is fixed back in place by suture or a fine wire nail, and the wound resutured.

After-treatment.—The patient is fixed in a plaster-of-Paris spica with the thigh in the position in which fixation is desired. This is usually 25 per cent. flexed, slightly abducted, and externally rotated. Tenotomy of the adductors is carried out if spasm opposes the maintenance of this position. The plaster spica has not been extended to the chest. It relies for control of pelvic movement upon its extension to the upper half of the sound thigh with a well-defined grip of the tuber ischii on the sound side. In old patients I am sure that this type of spica is better tolerated than one fixing the lower part of the chest and so enforcing complete recumbency. The spica is maintained in position for about two and a half months. The plaster is often changed about three weeks after operation. Two to three months after operation a short spica is applied and the patient started to walk with crutches. Patients are left free of any splint not later than the fourth month, after which general physicotherapeutic measures are applied to restore function and mobility of the normal joints.

OPERATIONS AIMING AT A MOBILE JOINT

After exposing the joint by the Murphy route the head is dislocated backwards. The ileo-femoral ligament is thus left intact. The head of the femur is cut off and the stump pared down so as to leave a rounded end of healthy bone which fits the acetabulum loosely. The acetabulum is not touched. Free fascia has been used in a few cases to cap the bone, but latterly I have limited myself to waxing the raw surface of the femoral neck. After replacement of the stump in the acetabulum the great trochanter is pinned back on the shaft of the femur about 1 in. below its original situation on to a prepared raw bone bed. This operation can be performed with sufficient precision in about twenty minutes.

After-treatment.—Many cases have been fixed in a plaster spica for two or three weeks after operation as it has been found easier to nurse them when so fixed. At the end of the period they are transferred to a Hodgen splint to which, weight traction of 5 to 10 lb. is applied for a few weeks. After this the patient usually lies free in bed, and is encouraged to move the hip passively with the help of a sling and pulley.

A weight-relieving calliper is sometimes fitted for a few months at about eight weeks after operation. In any case weight-bearing is not allowed till three to four months after operation. Physicotherapeutic treatment is employed about a month after operation.

Results

Ninety-six cases have been investigated for me by my chief assistant, Mr. N. R. Barrett. Nineteen cases were operated on at a Pensions Hospital and have not been followed further than when reported on by me in 1924.[20] The others, with the exception of six who could not be traced, have answered a questionnaire or have been examined by N. R. B. and X rayed during the past year. The figures showing the time after operation at which the cases have been examined are:—

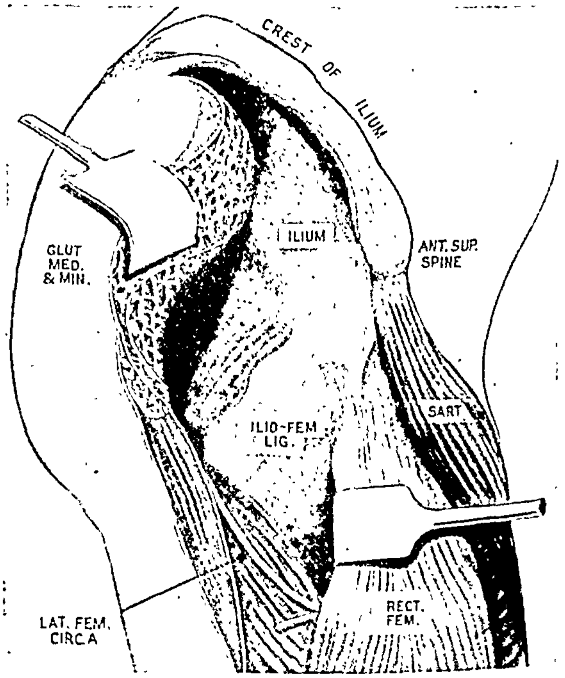


FIG. 4.—Schematic drawing of exposure of the hip-joint by Smith Petersen method, employed in 15 cases. Ilio-fem. lig. = ilio-femoral ligament. Rect. fem. = rectus femoris muscle. Lat. fem. circ. A. = lateral femoral circumflex artery.

Under five years	36 cases.
Over five years and up to fourteen ..	53 ,,

Case No.	Age and sex.	Side	Condition and ætiology.	Operation and approach.	After treatment.	Movement possible in the joint and/or condition of joint by X ray when last seen.	Position and shortening.	(*a*) Pain in hip. (*b*) Pain in other joints.	(*c*) Functional value. (*d*) Opinion of patient.	Time since operation.
38	54 M.	R.	2 years' history of hypertrophic O.A. of R. hip. X ray of hip confirms. X ray of knee shows changes of O.A. on the same leg.	15/5/24: Erasion of joint after dislocation. Murphy approach. R. side.	P.P.S. 2½ months.	X ray 1934: R. hip: Fibrous joint. New laid down above head. Sclerosis of head and acetabulum +. L. hip: Mushroom head. New joint 1″ upon ilium. Gross O.A. 20° of painless flexion right.	Position of both hips normal. 1″ short right. 1½″ short left.	(*a*) None. (*b*) Pain in lumbar spine. X ray 1934: gross O.A. of lumbar spine. Condition of knee has not progressed.	(*c*) Good as regards hip, but somewhat spoilt by lumbar spine, which is getting worse. (*d*) Completely successful as regards pain and walking.	10 y.
44	63 F.	R.	16 years of pain in R. hip and leg. X ray: Hypertrophic O.A. No other joints involved.	16/12/24: S.P. approach. Erasion of joint after dislocation.	P.P.S. 6 weeks.	—	—	(*a*) Pain still present in hip. (*b*) Pain complained of in other hip and in both knees.	(*c*) Poor; pain not cured. Cannot walk more than a few yards. (*d*) Op. decidedly worth while.	10 y.
45	49 F.	R.	12 years' of pain in R. hip following an injury. X ray: O.A. hip on right side and O.A. of both knees.	12/2/24: Erasion of joint after dislocation. Murphy approach.	P.P.S. 2 months.	X ray 1934: R. hip: Joint space present sclerosis ++ of both surfaces. Block of bone from ilium above femoral head. Upward dislocation of ½″. Sound fibrous ankylosis.	Normal. 1″ short.	(*a*) None. (*b*) Pain in R. knee. Condition in this knee has not changed since before op. Also has arthritis of lumbar spine, but does not complain of this.	(*c*) Good; can walk about easily and do household work. (*d*) Excellent.	10 y.
62	59 M.	R. and L.	Pain in both hips and L. shoulder, 4 years. X ray: Hypertrophic O.A. both hips.	19/2/27: Removal of diseased cartilage and remodelling of femoral head. Acetabulum not touched. Murphy approach. L. hip.	Treated on a Hodgen splint.	State to-day: L. hip: Some movement possible in all directions, limited by pain. R. hip: Painless and fixed.	Some adduction and flexion. ½″ short.	(*a*) Yes. (*b*) None.	(*c*) Poor result; op. has resulted in a painful arthroplasty. (*d*) Op. definitely worth while.	7 y.
65	64 F.	L.	2½ years' of pain in L. hip. Recently similar pains in the other hip and both knees. X ray: O.A. hip, but not of other joints.	16/2/27: Erasion of joint after dislocation. Murphy approach.	P.P.S. 9 weeks.	X ray 1934: L. hip: Very marked beak of bone above the femoral head. Joint space present. Sclerosis ++. R. hip: Similar condition on other side. Not so advanced. Unsound arthroplasty.	Good position. 1″ short.	(*a*) Hip very painful on movement. Movements limited by spasm. (*b*) Spine, R. hip, knees, all painful.	(*c*) Bad result; limited to some extent in movements; foot drop which still remains. (*d*) Op. no good.	7 y.
74	55 M.	R. and L.	Pain and stiffness in both hips for 1 year. X ray: Advanced O.A. of both hips. R.>L.	23/7/29: Whitman's reconstruction of hip on R. side. Murphy approach.	P.P.S. for a few weeks; replaced by Hodgen splint and extension after suppuration.	X ray 1934: R. side: Joint space present. Sclerosis on either side of the joint. New bone laid down in a beak above the neck. L. side: Advanced O.A. with new bone above the neck. Painless pseudarthrosis on side of op. About 25° of flexion possible.	Good position. 1½″ short.	(*a*) None. (*b*) Pain continues in the *other* hip, but X ray does not suggest that bone changes have progressed since op.	(*c*) Excellent on the side of op.; result limited by other hip. (*d*) Op. a success.	5 y.
76	49 F.	R. and L.	9 years' pain and stiffness in both hips. X ray: Hypertrophic O.A. of both hips.	27/2/29: Removal of osteophytes and cartilage from head of femur. Acetabulum not touched. Murphy approach. L. hip.	Thomas's splint with extension by a pin through the os calcis.	Painless pseudarthrosis on L. side. Not much movement possible.	Both sides in good position. About 2″ short on each side.	(*a*) None. (*b*) Both knees stiff and occasionally painful.	(*c*) Moderate. Pain cured but patient cannot get about much, as movement at hips is not sufficiently free. (*d*) Ops. worth while, but disappointed that she cannot get about much.	5 y.
				20/12/29: Same operation as above. Murphy approach. R. hip.	Treatment as above.	Painless pseudarthrosis on R. side. Very little movement. Has some rotary control on this side.				
83	53 F.	R. and L.	22 years' history of O.A. both hips. X rays: Marked O.A. clinically. R. hip painful, L. hip practically fixed.	15/3/30: Head of femur trimmed up. Fascial covering inserted around the head. Murphy approach.	Pearson bed with 7 lb. extension.	X ray 1934: R. hip: Head of femur missing, broad joint space. Sclerosis ++. Sound arthroplasty. L. hip: Typical appearance of old O.A. with beak of bone above the femoral neck.	Good position. Not much shortening.	(*a*) None. (*b*) Pain in other hip occasionally.	(*c*) Moderate. Condition of other hip spoils functional value of op. (*d*) Op. well worth while.	4 y.

In the above Table, Cases 38, 44, 45, 62, 65, 74, 76 and 83 are referred to in the text. The table, which was worked out in order to investigate 96 cases, will be published in full in the 1935 edition of the St. Thomas's Hospital reports.

patients where the hip condition is absolutely satisfactory.

ESTIMATE OF LATE RESULTS IN TRACED CASES

Results are divided into good, moderate, and bad. The *good* results are those who clinically are good walkers, without pain elsewhere, and who have been able to get about almost as well as normal individuals. The *moderate* results are those whose local condition is absolutely satisfactory but in whom the result has been spoilt by pain elsewhere, or by some late complication directly connected with the operation; practically everyone of the patients in this series has volunteered the opinion that in spite of the severity of the operation and the long convalescence the operation was worth while. The *bad* results are those who have not been improved at all or who are now worse than before operation.

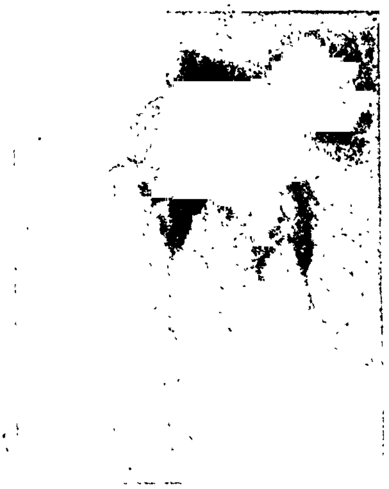


FIG. 8.—Radiogram showing condition when a fibrous joint was present with "beak" formation above the acetabulum.

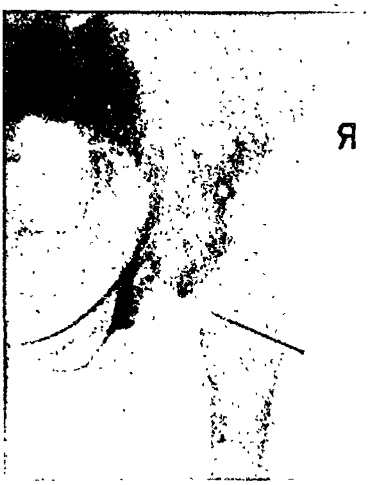


FIG. 9.—Radiogram showing condition three months after arthroplastic resection.

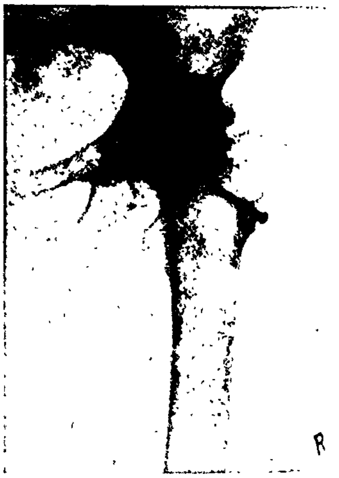


FIG. 10.—Radiogram showing condition four years after arthroplastic resection.

RELATIVE VALUE OF THE TWO TYPES OF OPERATION

Arthrodesis has given better results than arthroplasty. It may be noted that in the 69 cases in which a fixed joint was aimed at this was only obtained in 46 cases. In 29 cases checked by X rays true bony ankylosis was only present in 7. The results of these 46 cases are classified as good or moderate with no complete failures. The total of 14 bad results (after either type of operation) all had movable joints. There may be reasons which make the provision of a fixed joint undesirable or impossible, but it seems to me that there is no doubt that the fixed joint is most certain to give sure and lasting success. Operations for bilateral hip disease have proved disappointing (Cases 44 and 65), though the patient may be pleased with the result (Cases 74, 76, 83).

Operations (69) *aiming at Arthrodesis*

—	Good.	Moderate.	Bad.
Bony ankylosis proved by X rays	7	—	—
Fibrous ankylosis proved by X rays	18	4	—
Clinical ankylosis (X rays not available after operation) ..	13	4	—
Movable joint	11	4	8
Totals	49 (70 %)	12 (17·4 %)	8 (11·6 %)

See Figs. 5, 6, 7, and 8.

Operations (19) *aiming at Arthroplasty*

Movable joint	6	4	6
Fixed joint—			
Fibrous ankylosis	1	1	0
Bony ankylosis	—	1	—
Totals	7 (37 %)	6 (31·6 %)	6

See Figs. 9 and 10.

It may be noted here that these authorities who advocate a reconstruction operation do not claim more than about 60 per cent. of successes (Bergmann and Payr). It must be admitted that the successful arthroplasty gives a brilliant result which surpasses in functional value that of the fixed hip, but in operations for the condition under review these bright spots are too few and far between.

It may be suggested that with a different technique better results may be obtained. I think this is true of the operations arriving at an arthrodesis, but I am very doubtful whether the same can be said of the reconstructive operations aiming at a movable joint. In my experience, which is confirmed by an analysis of these cases and a study of the literature, it is very difficult to say what technical feature of the operation has produced a good result in any given instance. The most ingenious procedures precisely carried out may result in a stiff or painful hip. A rough reconstructive excision may produce a freely movable joint. I think the fate of these cases depends on the vascular supply of the part and the continued activity or otherwise of those factors which were responsible for the primary bone change.

In the case of an operation to produce arthrodesis of the hip-joint we know that quite apart from after-fixation it is a difficult joint in which to procure bony fusion by a simple rawing of the adjacent articular surfaces of the femur and acetabulum. The addition of an extra-articular graft as first advocated by Albee, adds greatly to the chances of success. If I had employed this technique as a routine my technical and probably clinical successes would have been greater in number. At the same time it should be remembered that the effective cutting and placing of an extra-articular graft in the hip takes time, adds to the shock of the operation, and so the likelihood of influenza in January. There was complete absence of abdominal tenderness or rigidity. Rectal examination was negative. Agglutination tests for all the common and uncommon food poisoning organisms had already been carried out and were negative, as was also bacteriological examination of the urine. The white count, however, showed 11,000 leucocytes of which 80 per cent. were polymorphs.

Here I must interrupt the history to suggest that enumeration of the white cells is the second investigation of importance in cryptic fever. A leucocytosis with relative and absolute increase of polymorphs at once excludes a large number of causes of obscure fever—e.g., typhoid, paratyphoid, tuberculosis (except occasionally the miliary form), influenza, and malaria. It strongly suggests that one is faced with a hidden area of inflammation due to one of the common pyogenic microbes. It demands daily meticulous examination if a serious outcome is to be averted. Incidentally, leukæmia as a cause of fever may be revealed by the white count only. In the case quoted, the history was all important because the only symptoms, apart from feverishness, were, though vague, yet definitely abdominal. The fresh rise of temperature after taking castor oil again suggests the alimentary tract as the origin of the trouble.

The next day a further complete examination was carried out, and on this occasion a thickening and tenderness could be detected on high rectal examination. In short, the case was simply one of a "pelvic appendicitis" starting with septicæmic symptoms, subsiding, and then relapsing with abscess formation. The history and the white count indicated approximately the seat and type of the inflammation, and consequently gave rise to sufficient apprehension to demand repeated comprehensive examinations until some sign should turn up to settle the diagnosis.

Rectal examination might be added as the third imperative investigation in pyrexia of unknown origin, particularly if there are associated symptoms of abdominal discomfort or diarrhœa. It is often noticed when a pelvic abscess is present that the anus is peculiarly patulous owing to paralysis of the internal sphincter. An abscess in the prostate may be completely overlooked as the cause of fever if this examination be omitted.

Classification

As a somewhat broad classification of perplexing fevers I suggest (1) endocrine, (2) toxic, (3) cerebral, (4) microbial, the last being much the commonest.

ENDOCRINE ORIGIN

The thyroid is the only member of this group which at all frequently gives rise to slight, but persistent, pyrexia without obvious signs. Early Graves's disease in this way resembles chorea, that once it is thought of it can be diagnosed without difficulty. That is to say, its characteristic signs can be *elicited*. But it is not, perhaps, generally recognised that for several months the disease may be accompanied only by a raised temperature—e.g., 99°, trivial loss of weight, and nervousness without tachycardia or appreciable thyroid enlargement. The startled, wide-open eyes may be noticed for a moment as the patient enters the room, and are not revealed again during the consultation. Rise of pulse-rate on slight exertion and tremor can, however, usually be brought out if looked for.

Occasional outbreaks of fever in the grossly obese are puzzling, and suggest a spasmodic effort of the body to consume its strangling deposits. They disappear with reduction of weight.

TOXIC ORIGIN

Under this heading I include a not uncommon cause of pyrexia, namely, degenerating new growths, e.g., fibroids, sarcomata, and carcinomatous metastases in the liver. In the case of malignant growths the patient always looks ill by the time fever is produced, but often one is hard put to it to clinch the diagnosis.

The prolonged though slight fever which so often follows cardiac infarction is presumably another example of the chemical agency of dead tissue. In the days before the clinical picture had been differentiated from that of angina pectoris, the low grade pyrexia was a fruitful source of worry to many of us, though we must be grateful to it in retrospect for having, by its existence, secured for the patient a prolonged rest in bed.

Alcoholic hepatitis is another example of this group. The instances I have encountered have been in stockbrokers or doctors. In no case could the patient be described as a drunkard, yet the daily consumption of whisky, sherry, and often cocktails has amounted to the equivalent of 150 to 300 c.cm. of alcohol. The liver is slightly enlarged and tender; the evening temperature rises to about 99° F. The pyrexia and liver enlargement may disappear after a few weeks of abstention.

The sale of certain "slimming" drugs, notably dinitro-ortho-cresol is, it is to be hoped, to be severely restricted, otherwise these will also provide us with diagnostic difficulties.

CEREBRAL ORIGIN

I am chiefly concerned here with the psychic functions of the brain, leaving the organic disturbances of the thermotaxic centre, as by heat-stroke, hæmorrhage, or tumour, out of consideration owing to their rarity in the absence of some clear history or sign to indicate the nature of the disease. When, however, we come to the "functional" pyrexias we at once enter a large field. My experience is that the vast majority are factitious, but undoubtedly a few are genuine enough, and occur in very nervous subjects. Children who have had much illness are extraordinarily liable to run persistent fever after, for instance, a simple coryza. It may be argued that this is really evidence of poor resistance to infection, but the fact remains that if they be got up and sent about their ordinary life the fever commonly abates in the course of a day. I have seen a steady pyrexial swing of 98° to 99·2° develop in a neurotic woman after she was diagnosed by an Abrams's box expert as suffering from "streptococci." It lasted five weeks and was said to be cured by percussion of the seventh cervical spine by a chiropractor.

The tricks for the production of pyrexia by the malingerer are legion, most of them being ingenuous. Fortunately, these patients often reveal themselves by feigning extreme exhaustion. They lie prostrate and supposedly semi-stuporose. One's suspicions are aroused by the sight of a well-nourished woman with normal pulse, no physical signs of disease, obstinately closed eyes, and a temperature chart showing fever of several weeks' duration. In every case of this sort the doctor should take the rectal temperature himself, and keep his hand on the thermometer the whole time. If the patient is protecting herself with a semblance of lethargy or semi-consciousness, it often pays to whisper to the attendant nurse. I have not yet met an hysterical or malingering subject whose curiosity could resist such a bait. One notices the head turn ever so of post-operative complications. It is sound business in the healthy patient, but I do not think it should be blindly used in less satisfactory risks.

In the results it will be noted that a large number of the patients are left with the limb in an adducted position. I think a more frequent use of tenotomy of the adductors might lead to an improvement in this respect. The use of a Smith Petersen pin to fix the bones after preparing their surfaces is attractive in theory. In practice it is not easy to drive the pin into the iliac buttress. If the pin merely penetrates the central part of the acetabulum its mechanical value is slight.

DISADVANTAGES OF A FIXED HIP

A hip fixed in a good position is little handicap to a patient in the upright position. They can walk with little limp and can carry heavy weights. The comfortable assumption of a sitting posture is dependent on the mobility of the lumbar spine and knee-joint. If both are free the patient can put on his own shoes and stockings but not otherwise. If there is any degree of fixed adduction the condition may be an impediment to normal sexual life in younger women.

A stiff hip implies secondary strain on the knee, sacro-iliac, and lumbar spinal joints. The knee may develop a measure of hyper-extension. The strain in the lumbar area is often responsible for muscular pain in the early convalescent period. In this group of cases it has seldom been persistent. The presence of early osteo-arthritis in other joints does not entirely contra-indicate radical operation on the hip. Cases 38, 45, and 62 illustrate this point. I think the more chronic the disease in the hip the less probable is secondary changes in other joints. When the process is relatively recent and active in several joints it is advisable to defer radical operation.

The advantages of a successful arthroplasty are obvious from the point of view of general convenience. These patients, however, seldom walk without a dropping limp and are not as physically efficient in the upright attitude as the patient with one stiff hip. The freedom of movement obtained is seldom more than 90° of flexion and 15° of abduction.

It would appear from these results that when the disease is limited to one hip-joint and if the physical condition is sound arthrodesis is the operation of choice. A Smith Petersen incision and the application of an iliac graft will be most likely to give the desired result.

When both hips are involved or if the lumbar spine is stiff and the seat of arthritis a remodelling operation should be chosen. The Murphy approach is satisfactory for this purpose. The speed with which this operation can be carried out and the relatively short period of fixation which is required afterwards make it the operation of choice for elderly patients who are bad risks yet in whom intractable pain justifies operation.

In conclusion I think, though I may have suggested that radical surgery applied to osteo-arthritis of the hip is a somewhat laborious affair for the surgeon and certainly a trial of fortitude to the patient; yet the late results are much more consistently satisfactory to the sufferer than one might expect, and fully justify our enterprise.

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(Continued at foot of next column)

PYREXIA OF OBSCURE ORIGIN*

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There are probably few conditions which bring together the general practitioner and consultant more often than does pyrexia of unknown origin. It holds, also, the major responsibility for shattered reputations and disgruntled relatives. Can any lay person be expected to believe that diagnosis may be quite impossible for several days of fever? The first days of typhoid, paratyphoid, influenza, and even measles may defeat the ablest clinician, who should be wise enough to admit it, rather than to commit himself to a diagnosis just to keep the family quiet. The term "influenza" is the commonest diagnosis of convenience, but it turns upon its creator if followed by the appearance of a rash or signs of a lobar pneumonia.

However, quite apart from the acute fevers whose nature is soon revealed, there exists a host of complaints which may manifest itself for days or weeks only through pyrexia. Now although I suppose every one of us has been baffled more often perhaps than we care to admit in the search for the cause of a pyrexia, it is chastening to remember that the majority of failures are usually due to lack of thoroughness in some routine investigation which does not require extraordinary skill. Of these investigations I put history-taking first of all. When we are considering feverish illnesses with scanty signs our only hope lies in obtaining diagnostic information from the patient. Obvious as this may sound, it can never be too greatly emphasised. As an example, let me quote the case of a doctor whom I saw recently on account of persistent pyrexia.

His history was that on July 21st he had a rigor, vomiting, and a rise of temperature to 102° F. from normal in half an hour. The next day he had frequent rigors, but the vomiting stopped when the bowels had been opened *with an enema. On the 24th he felt* well, the temperature was normal and he started work again, and even played tennis. The only persistent trouble was constipation. This he treated with castor oil on the 26th. The following day the temperature rose, and on the 29th he had to go to bed again with a temperature of 104°. Since that date until August 2nd, when I saw him, his temperature had fluctuated from 98·4 to 100°. There was general slight abdominal discomfort, no nausea, and a good appetite.

Examination.—Pulse, 72; temperatur[illegible] tongue slightly furred. No other physical signs [illegible] at an opaque left antrum which had been infec

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* An address delivered to the Swindon [illegible] Medical Association on Feb. 27th, 1935.

(*References continued from previous column*)

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bronchial exit of the cavity. Recovery followed the induction of a pneumothorax.

Tuberculous glands in the mesentery are, on the other hand, often overlooked for the very good reason that they may give no definite signs. Here again history is all important. Attacks of shooting right-sided pain, intermittent malaise and loss of appetite, slight loss of weight and particularly loss of vigour are all suggestive. In an attack, localised tenderness is always present and the stools may be pale. In patients over 10 years of age an X ray quite commonly reveals areas of calcification in the right iliac fossa.

Bacillus coli infection of the urinary tract and of the gall-bladder causes a great amount of chronic ill-health and irregular fever. The urinary infection is seldom overlooked except in infants in whom it may cause high fever and vomiting. On the other hand, chronic cholecystitis is probably one of the commonest causes of low grade recurrent pyrexia. It is usually associated with flatulent dyspepsia, but tenderness is very localised, and only to be elicited if the patient breathes deeply against the firm pressure of the palpating finger. A normal cholecystogram in the face of suggestive symptoms, and this sign, should not be allowed to influence the diagnosis.

The only other relatively common cause of obscure fever is *erythema nodosum.* It must be admitted that the obscurity is usually referable to the fact that the legs have not been exposed. Failure to look at a patient's legs is commoner even that failure to look for enlarged glands or disease of the breasts.

Rarer disorders.—It has been my purpose to discuss chiefly the common maladies which produce cryptic fever, so I shall not do more than mention in passing the necessity of considering phlebitis, which may be painless and thus overlooked. Hodgkin's disease (often undiagnosable for weeks), lymphatic leukæmia, malaria, dysentery and tropical abscess, syphilis, rat-bite fever, and allied diseases. Glandular fever has always the adenitis to point the way, and sinus infection, though very common, seldom, in my experience, causes persistent pyrexia.

SUMMARY

(1) Most cases of obscure pyrexia prove to be quite common diseases.

(2) History, examination, and leucocyte count will usually indicate the diagnosis.

(3) Glands, bones, muscles, pelvic organs, and legs must not be overlooked.

(4) Certain drugs such as alkalis in *B. coli* pyelitis, salicylates in rheumatic fever, quinine in malaria, emetine in amœbic abscess, and N.A.B. in protozoal infections may, if all else fails, be the determining agents in establishing the diagnosis.

Although once in several years practitioner and consultant may meet a case of fever which is complex and strange, this is rare. A frank confession of diagnostic sins must include the admission that most failures have been due to careless listening, examining, or thinking rather than to any peculiar pathological rarity.

ROYAL LONDON OPHTHALMIC HOSPITAL.—The King George V. extension of this hospital has been opened by the Duke of York, who was accompanied by the Duchess. The Duke said that the extension of Moorfields was a wonderful tribute to the voluntary hospital system. So far £108,000 had been raised towards the required £113,000, and he hoped that before the end of the Jubilee period the total would be obtained.

EPIDEMIC PEMPHIGUS OF THE NEWLY BORN

(IMPETIGO CONTAGIOSA ET BULLOSA NEONATORUM)

BY W. H. POOLE, M.B. Camb.

AND

C. H. WHITTLE, M.D. Camb., M.R.C.P. Lond.
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PEMPHIGUS of the newly born is a highly contagious skin disease which affects infants in the first few days of life. It may occur either in endemic or epidemic form; the latter variety has been rare until comparatively recently, but is now beginning to constitute a serious hospital problem. It is in America that this problem is most acute, widespread epidemics being reported with increasing frequency since about 1917. There is, however, evidence to show that the disease is becoming more prevalent in this country also, and in 1927 the Central Midwives Board issued a pamphlet[1] on the subject, describing, with the aid of a coloured plate, the rash of the disease, and giving suggestions for its prevention and control. An epidemic outbreak occurred in Cambridge during the summer months of 1931, and though adequate details were obtainable in only 9 cases it seems worthy of record if only because of the light which it seems to throw on the ætiology. Before discussing it we propose to review briefly the accounts of pemphigus neonatorum available elsewhere.

HISTORICAL

The earliest description of pemphigus of the newly born was by Ochene[2] in 1773, but it was not until 1864 that Tilbury Fox[3] first drew attention to the contagious nature of the disease, though epidemics had been described by Rigby[4] in England in 1834, and by Leseque and Trousseau[5] in France in 1850. Moldenhauer[6] recorded an epidemic in Leipzig in 1874; in 1886 Demme[7] performed the first bacteriological research into the condition; and Zechmeister[8] in 1887 first drew attention to the part played by the midwife as a carrier. From this time onwards reports were published from various parts of the world with increasing frequency; in 1904 the condition was first reported in America by Call,[9] and in 1912 Dohi and Dohi[10] gave an account of an epidemic in Japan.

The incidence has continued to rise, and Reed[11] has observed that about 1917 a disease which had been comparatively rare and sporadic changed in character and began to appear in nurseries and institutions in an increasingly virulent and epidemic form. This increase has continued.

DEFINITION AND NOMENCLATURE

The disease may take various forms, the lesions being essentially vesicular. But sometimes they become crusted, and at other times lead to widespread exfoliation, so that there is a considerable confusion of terminology. There is no doubt that the conditions described as impetigo contagiosa neonatorum, impetigo bullosa neonatorum, pemphigus neonatorum, dermatitis exfoliativa, Ritter's disease, pemphigoid, and pyodermatitis contagiosa neonatorum are in reality only different forms of the same disease. In this paper the term pemphigus neonatorum is used to cover all the varieties.

little, enough to favour one ear, and the eyelids part just a fraction, so that the whisperers shall be observed. Hysterical stupor, feigned meningitis, and what not can be caught out this way, but there are unfortunately some who are much more versed in the art of being sick.

Once satisfied that the patient is a malingerer, it is, I find, better to deal with her alone. Any audience will produce stubborn resistance. I generally say straight out that I am not in the least impressed by the performance, but that if the patient will start recovering within 24 hours, I will not give her away to her relatives, and will let them assume that whatever disease has been suggested is now passing off. This subterfuge is justified, because no patient can face exposure and will most obstinately go on shamming unless protected by the doctor. One must as it were give her a decent method of escape from the position she has assumed, with the alternative of brutal exposure if she fails to coöperate.

MICROBIAL ORIGIN

Microbic diseases provide us with far and away the largest selection of puzzling cases of fever. The instance which I find has occurred most often in my experience is *infective endocarditis*. The subacute bacterial type is notoriously difficult to diagnose, for the onset is very insidious and the signs slight. The most helpful points are the sickly complexion of the patient (it has been described as café-au-lait), shortness of breath, an invariably raised pulse-rate, slight albuminuria, and the finding of red cells in the urine on microscopic examination. There is almost always an old and recognised rheumatic valvular lesion to assist one, but such diagnostic signs as Osler's nodes, enlarged spleen, clubbed fingers, petechial hæmorrhages, and positive blood culture have often to be awaited for many weeks. Even more frequently I have been consulted on account of fever due to the more fulminant, malignant, or ulcerative type of endocarditis. The reasons for the nature of the disease being overlooked are (1) familiarity with and consequent disregard of the existing valve (usually aortic) lesion; (2) the occurrence of pains in the limbs, which are assumed to be those of a fresh attack of acute rheumatism. Most cases, however, arise in middle life, when recurrence of true rheumatism is uncommon. Again the obvious severe illness of the patient, the pallor, loud murmurs, and sweating should direct attention to the skin, spleen, and urine for evidence of embolism and to the fingers for the early changes of clubbing.

Staphylococcal fever comes high in the list, for it may produce a symptomless fever apart from the usual discomfort of a swinging temperature. Here undoubtedly the most helpful points are (1) leucocytosis of about 12,000 with a relative increase of polymorphs, and (2) a slow pulse in relation to the temperature—e.g., temperature 101° F., pulse 76 to 84. The first point excludes the typhoid group, and suggests pyogenic infection. The staphylococcus is the only common organism to produce such a pulse-temperature ratio. A history of a boil a week or two previously is usually forthcoming, but only if inquiry is made. The development of perinephric abscess as a result of a secondary renal cortical abscess is a common sequel, but it may be symptomless for two or three weeks, or it may give rise to pain referred to the right iliac fossa and lead to operation for appendicitis. The earliest sign may be a gradual rising of the diaphragm on the affected side, with restricted lung excursion; but more often a slight fullness of the loin can be detected if the back be observed from above with the patient sitting forwards. Once the condition is suspected, the loin will, of course, be repeatedly examined for tenderness, and it may be observed also that the patient prefers to keep the thigh on the affected side flexed. It is not fully appreciated that in most cases of so-called perinephric abscess the lesion starts in the kidney and, therefore, the *Staphylococcus aureus* is often to be cultivated from the urine. Residual metastatic abscesses may often perpetuate fever even though the main area of sepsis has been drained. For instance, the prostate, bone, or even muscle may harbour such a focus which may be symptomless until palpated.

Even now we have not exhausted the various revelations of an underlying staphylococcal septicæmia. For instance, I have met two cases of repeated hæmoptysis, wasting, and fever, both originally diagnosed as tuberculosis, and yet proving to be due to staphylococcal lung emboli. In the one case the origin of the infection was eventually traced to the tonsils from which a pure growth of *Staph. aureus* was cultivated; in the other an old gunshot wound of the thigh formed the site of original infection. The value of a leucocytic count in both cannot be over-emphasised.

Streptococcal septicæmia is far less commonly a source of diagnostic difficulty because there is an initial acute inflammation at the portal of entry; usually the throat.

Food infections come high in this series. By these I mean not only typhoid and paratyphoid fevers, but also diseases arising from associated organisms of the salmonella group and of abortus fever. Headache, dirty tongue, diarrhœa or constipation, pyrexia of 100° to 103° F., nausea and often vomiting may be the symptoms, but diagnosis is extremely difficult. Once again a leucocyte count is of great value, for a leucopenia, or at least absence of leucocytosis, in association with such symptoms and high temperatures is very suggestive of one of the food poisoning organisms. Early bacteriological examination of the stools and urine is always advisable. After a week it is unlikely to be fruitful, but soon after this agglutination reactions develop and may in fact be the sole means of clinching the diagnosis. I have been impressed by the frequency of the *Bacillus aertrycke* in these cases. It should be borne in mind that recent T.A.B. inoculation does not exclude the possibility of typhoid fever. Only a few months ago I saw a lady with signs very suggestive of typhoid who had received full protective inoculation five weeks prior to her being infected in the East. The agglutination reactions were temporarily dismissed on the assumption that the vaccine was responsible for them. A few days later rose spots and pea-soup stools pointed unhesitatingly to the diagnosis which was confirmed by a rising titre and falling white count.

Pulmonary tuberculosis does not feature very largely in this series because slight fever with loss of weight and appetite rarely fails nowadays to lead to X ray investigation. Nevertheless, one of the most puzzling cases I have met was presented by a young woman who proved to have a small cavity in the right lung with no surrounding infiltration. Her symptoms were attacks of fever (temp. 100° F.) lasting for 8 to 16 hours. The attacks occurred about once a month and were ushered in by shivering. There was slight loss of weight but no cough. The only physical sign was diminution of movement of the right side of the chest. Presumably these remarkable outbreaks were due to temporary plugging of the as to involve almost the whole body, leaving a moist red surface beneath. The first case of the Cambridge epidemic was of this type, and it is curious that in many of the epidemics recorded the initial case presents severe exfoliation, its successors being milder. This was observed by Cole and Ruh,[18] whose first case showed severe exfoliation and proved fatal; by McCandlish,[23] with whom 3 severe and exfoliative cases, ending fatally, were followed by 221 mild cases, with no deaths; and by Swendson and Lee,[25] who reported a series of cases between March, 1929, and October, 1930, of which only the first showed generalised and severe exfoliation.

The second class contains the majority of cases. The size of the lesion, and whether a bulla or a vesicle, varies in different epidemics, and is of little significance, except that with large bullæ coalescence and exfoliation are commoner.

The third class contains the rare cases, with crusted lesions, as already described. Umbilical sepsis has been suggested as a focus of the infection in pemphigus of the newly born. This is contradicted by the fact that in many of the cases there is no evidence of such sepsis, and also by the fact that the early lesions seldom appear in the umbilical region. Cole and Ruh [18] think that umbilical sepsis is far more likely to be secondary to pemphigus, and hold that in fatal cases the commonest cause of death is bacteræmia due to such infection.

SOURCES OF INFECTION

There can be little doubt that in the Cambridge epidemic the source of infection was Nurse A., who came in contact with all the babies except one. Inquiries revealed that no other person had come in contact with all the children before the outbreak. When this probable cause of the spread of infection was discovered the nurse was suspended from duty, and only one baby born subsequently was affected. This child did not live near to any of the other children, and no person could be traced who could have conveyed the infection from them. But Nurse B., who delivered and attended the infant, came from the same nursing-home as Nurse A., and it seems reasonable to suppose that, by contact with a carrier, she herself became a temporary carrier of the disease.

Some days before the birth of the first child, Nurse A. had a small perionychial whitlow. This had almost healed when the child was born, but it cannot be overlooked as a possible source of the infection.

The avenues by which the disease may spread are numerous.

It has long been recognised that the *lying-in nurse* is often the carrier of the infection; thus in 1887 Zechmeister [8] reported 28 cases from one midwife; in 1901 Jukovsky [26] encountered 12 cases delivered by the same nurse, and in 1903 Maguire [17] reported an epidemic of 18 cases, all except one of which came from one lying-in nurse.

The *mother* also may be the source of infection. Labhardt and Wallart [27] reported 16 cases of congenital pemphigus, and Reed [11] added 11 more; in these cases the infection appears to have been intra-uterine. Freeman records a hospital epidemic which is believed to have started from a congenital case. Mellon, Caldwell, and Winans [28] ascribed four outbreaks which occurred in nurseries to the presence of staphylococci in the mothers' milk; but Benians and Jones [24] thought this conclusion unjustifiable. Infected vaginal tears were considered by Cole and Ruh [18] as another source by which the child could become infected from its mother.

Falls [21] came to the conclusion that the infection might have its origin in any of the common pyococcal *skin infections*, such as impetigo or acne, in those who have to do with children. Reed [11] states that at times the physician is a carrier, particularly the general practitioner, who has to attend patients with open sepsis as well as doing obstetric work. In addition, all who come in contact with the cases, or in contact with carriers of the disease, are themselves liable to become carriers. Benians and Jones [24] and Swendson and Lee [25] have shown that *S. aureus* may be carried on the skin of apparently healthy subjects for considerable periods. Barber [29] points out that cocci from an active boil become scattered widely over the skin of the patient, who thus becomes a "pyococcus carrier." By contact with others he conveys the cocci, directly or indirectly, from his skin to theirs.

Finally, the disease may be transmitted by the contents of *hospital and nursery*, especially clothes, which may harbour specific organisms. Thus Schultheiss [19] traced an epidemic to hospital linen handled by a sorter with a suppurating paronychia.

The Cambridge epidemic illustrates spread of the disease by three of these avenues. In 8 cases infection was almost certainly spread by Nurse A., who was a carrier; in the last case it was apparently contracted from Nurse B., who became a carrier by contact; while one child (as already mentioned) was reinfected by his own clothes after being discharged cured.

ONSET

The bullæ characteristic of the disease usually appear within the first few weeks of life, and are the first sign. Collins and Campbell [30] found that in 6 out of 50 cases the onset was in the first four days of life; in 35 it was between the fourth and the eleventh days; while in the remaining 9 it was between the eleventh and twenty-first. Labhardt and Wallart [27] have recorded 16 cases in which the lesions were present at birth, and Reed [11] 11 others. Onset after the third week is rare, and the course is usually atypical.

In the Cambridge outbreak the day of onset was ascertainable in 8 cases, as follows: third day, 1; fourth, 3; sixth, 1; eighth, 3. Hofmann [31] maintained that an early onset was an indication of greater severity, but this does not agree with our experience.

The first lesion may be in almost any part of the body, though certain sites are commoner than others. In Collins and Campbell's [30] series of 50, it was on the groin in 17 cases, the lower abdomen in 10, the legs is 10, and the face in 3; in the Cambridge outbreak it was on the face in 2 cases, and in the other 7 was on the lower abdomen, leg, groin, axilla, neck, and fingers. The sites of election for the first lesion are evidently points of trauma: the napkin area and its surroundings because they are constantly irritated, and the face because it is readily accessible to scratching.

Three of our cases showed a latent period between exposure to infection and the appearance of lesions; for Nurse A., the carrier, who delivered the children, did not attend them afterwards, yet the lesions did not appear till the third, fourth, and sixth days. The latent period presumably depends on opportunities for inoculation by trauma, and Swendson and Lee [25] suggest that much bathing, rubbing with towels, and warmth and moisture from overclothing may encourage an outbreak to develop.

COURSE AND SYMPTOMS

Most of the Cambridge cases were mild and self-limited. In the 7 which recovered the lesions lasted over periods ranging from 18 to 27 days, the average being 22. Swendson and Lee [25] record a similar observation. In these mild cases the lesions appear

THE CAMBRIDGE EPIDEMIC

During July and August, 1931, a total of 9 cases came under our observation. The period during which new cases appeared was four weeks, and the epidemic lasted seven weeks. No cases were reported in the district after these.

There were two deaths. The first baby was very ill, ran a high temperature, showed complete desquamation of the horny layer over the whole body, and died a few hours after admission to hospital a week after the onset. The second death occurred in a seven weeks' premature child, who in the first three weeks was hardly ill in spite of extensive lesions. This child weighed only four pounds and was weakly from the first.

The other 7 cases were mild in degree, practically afebrile, with lesions varying from a pin's-head to a florin in size. No complications ensued except that in the fourth case an onychial infection developed on one finger and the nail was shed, and in the fifth case there was a recurrence of the disease after the child had been discharged from hospital clear of infection. The fresh infection was due to renewed contact with the clothes worn before admission.

BACTERIOLOGY

The bacteriology of pemphigus neonatorum has been the subject of much controversy.

The first observation was made in 1886 by Demme,[7] who isolated and cultivated a "non-chromogenic diplococcus" from the lesions of the disease. In 1891 Almquist[12] isolated, from the fluid in the lesions, an organism which was culturally and morphologically indistinguishable from *Staphylococcus pyogenes aureus.* He inoculated this organism into himself and produced a vesicular eruption, whereas the ordinary *S. aureus* produced a lesion of follicular type. Considering this an important point of distinction, he gave to the organism which he had isolated the name of "micrococcus pemphigi neonatorum."

In 1900 confusion was caused by Sabouraud[13] who obtained from the lesions of the crusted form of the disease a mixed growth of staphylococci and streptococci, and came to the conclusion that the latter were the causative agent, the staphylococcal infection being superadded. No further evidence has been produced in favour of this view except by Whitfield[14] in 1903, who described a single case in which he considered the infection to be of streptococcal origin.

Matzenauer[15] in 1900 isolated *Staphylococcus aureus* in pure culture, and concluded that the variety in the form of lesion produced by the organism was due to variations in virulence—an opinion since supported by much important evidence. In 1900 Bloch[16] made observations on 8 fatal cases, and found that although the children had died from streptococcal septicæmia staphylococci were present in the skin lesions. In 1904 Call[9] found staphylococci in the lesions of all the cases examined in an epidemic in an institution, and other observers who have confirmed these findings are Maguire,[17] Cole and Ruh,[18] Schultheiss,[19] Belding,[20] Falls,[21] and many others. Some investigators, notably Clegg and Wherry[22] in 1906, and Falls[21] in 1917, found diplococci and short chains in the lesions with some consistency; McCandlish[23] in 1925 considered these cases, as well as some of his own where diplococci had also been found, and came to the conclusion that they were in reality staphylococci, since on subculture the typical arrangement was found.

Benians and Jones[24] in 1929 made extensive investigations into the bacteriology of the disease. The *Staphylococcus aureus* isolated from all their cases showed no recognisable biochemical or cultural differences from the common *S. aureus* which is the cause of boils and follicular pustules. They also note that a streptococcus was recovered in only one of their cases—an isolated one, not related to an epidemic and in an older infant. They studied the possibility of a filtrable virus being the cause of pemphigus neonatorum, but their results were entirely negative.

Bacteriological investigations were made in 8 out of the 9 Cambridge cases, the only exception being the first case, in which the patient died shortly after admission. An intact bulla was punctured with a fine glass pipette, and the fluid was aspirated; this fluid was then inoculated on to the culture media, which were broth and a special nutrient agar. Bullæ of various sizes were chosen, and in every case the predominating organism was *Staphylococcus aureus* in typical form. In 7 out of the 10 cultures which were made this organism was found in pure culture; in the remaining 3 it was contaminated with a small proportion of *S. albus.* In 2 cases there were a few colonies of *S. albus* amid a large and almost confluent growth of *S. aureus,* and in the other case there were 3 colonies of *S. albus* amongst 37 colonies of *S. aureus.* Particular care was taken by one of us (C. H. W.) in the making of cultures, not only in selecting the earliest and youngest blisters, but also in spacing the inoculum on the medium so that the colonies resulting were not crowded. Special media were used which were designed for cultivating pneumococci and streptococci, and it is extremely unlikely that such organisms if present would have failed to appear in the cultures. Yet in no case were streptococci grown nor were any organisms seen in film other than staphylococci.

In this epidemic therefore the causative organism appears to be the *Staphylococcus pyogenes aureus.* Hæmolytic and serological tests were not performed.

PATHOLOGY

The lesion of pemphigus of the newly born is essentially one which affects the superficial layers of the skin. McCandlish[23] divides the lesions into three types:—

(1) Vesicles which coalesce and then rupture, leaving large areas of exfoliation; this form he regards as identical with the dermatitis exfoliativa of Ritter von Rittershein.

(2) Large discrete bullæ: he considers this form to be relatively rare.

(3) Small vesicles; these may coalesce, but do not lead to extensive exfoliation.

Most of the cases have lesions which fall into one of these classes, though sometimes two or more of the types may be in evidence, or the lesion may change from one to another. Moreover, the types merge into one another (especially 2 and 3) and such classification is purely arbitrary.

A lesion has also been described in which crusts are present. These cases are reported from Japan by Dohi and Dohi[10]; some of the bullæ became covered with thin crusts, the infection otherwise being identical with the forms usually described. A similar lesion was observed in one of the Cambridge cases, in which a bullous eruption upon the abdomen and buttocks existed simultaneously with a crusted lesion upon the neck and scalp. This variation in form made no difference to the course of the disease.

In view of the occurrence of this type of lesion, and the *purely arbitrary differentiation* between McCandlish's second and third types, the following classification seems preferable:—

(1) Exfoliative dermatitis.

(2) Vesicular and bullous lesions, in which extensive coalescence and exfoliation do not occur.

(3) Crusted lesions.

The first class contains the majority of severe and fatal cases. The desquamation may be so severe s to involve almost the whole body, leaving a moist d surface beneath. The first case of the Cambridge pidemic was of this type, and it is curious that in any of the epidemics recorded the initial case resents severe exfoliation, its successors being milder. his was observed by Cole and Ruh,[18] whose first ase showed severe exfoliation and proved fatal; y McCandlish,[23] with whom 3 severe and exfoliative ases, ending fatally, were followed by 221 mild ases, with no deaths; and by Swendson and Lee,[25] ho reported a series of cases between March, 1929, nd October, 1930, of which only the first showed eneralised and severe exfoliation.

The second class contains the majority of cases. he size of the lesion, and whether a bulla or a vesicle, aries in different epidemics, and is of little signi- icance, except that with large bullæ coalescence and xfoliation are commoner.

The third class contains the rare cases, with crusted esions, as already described. Umbilical sepsis has een suggested as a focus of the infection in pemphigus f the newly born. This is contradicted by the fact hat in many of the cases there is no evidence of such epsis, and also by the fact that the early lesions seldom ppear in the umbilical region. Cole and Ruh[18] hink that umbilical sepsis is far more likely to be econdary to pemphigus, and hold that in fatal cases he commonest cause of death is bacteræmia due to uch infection.

SOURCES OF INFECTION

There can be little doubt that in the Cambridge epidemic the source of infection was Nurse A., who came in contact with all the babies except one. Inquiries revealed that no other person had come in contact with all the children before the outbreak. When this probable cause of the spread of infection was discovered the nurse was suspended from duty, and only one baby born subsequently was affected. This child did not live near to any of the other children, and no person could be traced who could have conveyed the infection from them. But Nurse B., who delivered and attended the infant, came from the same nursing-home as Nurse A., and it seems reasonable to suppose that, by contact with a carrier, she herself became a temporary carrier of the disease.

Some days before the birth of the first child, Nurse A. had a small perionychial whitlow. This had almost healed when the child was born, but it cannot be overlooked as a possible source of the infection.

The avenues by which the disease may spread are numerous.

It has long been recognised that the *lying-in nurse* is often the carrier of the infection; thus in 1887 Zechmeister[8] reported 28 cases from one midwife; in 1901 Jukovsky[26] encountered 12 cases delivered by the same nurse, and in 1903 Maguire[17] reported an epidemic of 18 cases, all except one of which came from one lying-in nurse.

The *mother* also may be the source of infection. Labhardt and Wallart[27] reported 16 cases of congenital pemphigus, and Reed[11] added 11 more; in these cases the infection appears to have been intra-uterine. Freeman records a hospital epidemic which is believed to have started from a congenital case. Mellon, Caldwell, and Winans[28] ascribed four outbreaks which occurred in nurseries to the presence of staphylococci in the mothers' milk; but Benians and Jones[24] thought this conclusion unjustifiable. Infected vaginal tears were considered by Cole and Ruh[18] as another source by which the child could become infected from its mother.

Falls[21] came to the conclusion that the infection might have its origin in any of the common pyococcal *skin infections*, such as impetigo or acne, in those who have to do with children. Reed[11] states that at times the physician is a carrier, particularly the general practitioner, who has to attend patients with open sepsis as well as doing obstetric work. In addition, all who come in contact with the cases, or in contact with carriers of the disease, are themselves liable to become carriers. Benians and Jones[24] and Swendson and Lee[25] have shown that *S. aureus* may be carried on the skin of apparently healthy subjects for considerable periods. Barber[29] points out that cocci from an active boil become scattered widely over the skin of the patient, who thus becomes a "pyococcus carrier." By contact with others he conveys the cocci, directly or indirectly, from his skin to theirs.

Finally, the disease may be transmitted by the contents of *hospital and nursery*, especially clothes, which may harbour specific organisms. Thus Schultheiss[19] traced an epidemic to hospital linen handled by a sorter with a suppurating paronychia.

The Cambridge epidemic illustrates spread of the disease by three of these avenues. In 8 cases infection was almost certainly spread by Nurse A., who was a carrier; in the last case it was apparently contracted from Nurse B., who became a carrier by contact; while one child (as already mentioned) was reinfected by his own clothes after being discharged cured.

ONSET

The bullæ characteristic of the disease usually appear within the first few weeks of life, and are the first sign. Collins and Campbell[30] found that in 6 out of 50 cases the onset was in the first four days of life; in 35 it was between the fourth and the eleventh days; while in the remaining 9 it was between the eleventh and twenty-first. Labhardt and Wallart[27] have recorded 16 cases in which the lesions were present at birth, and Reed[11] 11 others. Onset after the third week is rare, and the course is usually atypical.

In the Cambridge outbreak the day of onset was ascertainable in 8 cases, as follows: third day, 1; fourth, 3; sixth, 1; eighth, 3. Hofmann[31] maintained that an early onset was an indication of greater severity, but this does not agree with our experience.

The first lesion may be in almost any part of the body, though certain sites are commoner than others. In Collins and Campbell's[30] series of 50, it was on the groin in 17 cases, the lower abdomen in 10, the legs is 10, and the face in 3; in the Cambridge outbreak it was on the face in 2 cases, and in the other 7 was on the lower abdomen, leg, groin, axilla, neck, and fingers. The sites of election for the first lesion are evidently points of trauma: the napkin area and its surroundings because they are constantly irritated, and the face because it is readily accessible to scratching.

Three of our cases showed a latent period between exposure to infection and the appearance of lesions; for Nurse A., the carrier, who delivered the children, did not attend them afterwards, yet the lesions did not appear till the third, fourth, and sixth days. The latent period presumably depends on opportunities for inoculation by trauma, and Swendson and Lee[25] suggest that much bathing, rubbing with towels, and warmth and moisture from overclothing may encourage an outbreak to develop.

COURSE AND SYMPTOMS

Most of the Cambridge cases were mild and self-limited. In the 7 which recovered the lesions lasted over periods ranging from 18 to 27 days, the average being 22. Swendson and Lee[25] record a similar observation. In these mild cases the lesions appear in one place, and for the next fourteen days the tendency is towards spread. This is by contiguity, in the form of recurrent crops of bullæ on an increasing area around the original site, and also indirectly, as shown by the occurrence of bullæ on other parts of the body. In all but 2 cases this spread to other sites was noted. It was observed that the secondary spread was almost always to sites which the child could readily reach with the fingers, the commonest being the face and groins. Accordingly the child's arms were splinted after admission to hospital, and the result was that no lesions developed on new sites.

Twelve to twenty days after the onset the appearance of fresh crops of bullæ suddenly ceases, and rapid healing takes place. Within six or seven days of this time healing is complete.

The disease therefore may be said to have three phases: (1) a period of latency, apparently of 2–3 days; (2) a period of spread, averaging about 14 days; and (3) a period of healing, usually about a week.

A striking feature of these cases was the local character of the disease and the mildness of constitutional symptoms. The babies took their food and put on weight during the whole course of the illness; they slept normally, and appeared to be perfectly well. Pyrexia was almost absent; in only one case did the temperature rise more than 2° above the normal, and then only for a short time. A striking testimony to the mildness of the infection was furnished by the case of the premature infant already referred to. It seemed so feeble that its survival seemed impossible; yet, although it ultimately succumbed with respiratory complications, it remained alive and appeared to thrive for 24 days after the onset of the disease, abundant crops of bullæ appearing during the whole period.

In the more severe type the onset is similar, but the bullæ are larger and spread with greater rapidity. They coalesce with extensive exfoliation, and the large raw weeping areas which are left may cover the whole body. There is considerable constitutional disturbance, the child being gravely ill with high fever. Death is a common sequel, the cause being a staphylococcal septicæmia, which Cole and Ruh [18] and others attribute to the infection involving the umbilicus. The duration of this type is often short; thus, Swendson and Lee's [25] case died on the fourth day, and the reports of Cole and Ruh [18] McCandlish,[23] Bloch,[16] Almquist,[12] and others show that such cases seldom survive beyond the twelfth day.

The first case of the Cambridge epidemic was of this severe type. The child had been ill a week before admission to hospital, the temperature was 104·8°, and the desquamation involved almost the whole body, large ragged pieces of epidermis hanging on by shreds. Death occurred within an hour of admission; unfortunately, permission for a post-mortem examination was refused.

DIFFERENTIAL DIAGNOSIS

The diagnosis is not as a rule difficult, but confusion may be caused by the following conditions:—

(1) In *pemphigoid syphilide* the eruption is symmetrical, and chiefly on the buttocks, palms, and soles. Other symptoms and signs of congenital syphilis are almost always present, and the Wassermann reaction is positive.

(2) *Impetigo contagiosa* is characterised by the formation of thick crusts, especially on the face and scalp.

(3) *Pemphigoid eruptions due to drugs* are uncommon, but may be caused by bromides, bismuth, or the heavy metals. A careful history is required.

(4) In *bullous varicella of the newly born* the diagnosis is often difficult, but there may be a history of exposure to infection. The eruption is usually generalised and accompanied by considerable constitutional symptoms.

(5) *Dermatitis herpetiformis* (Duhring's disease) is rarely seen in the first weeks of life, and is characterised by severe itching. The condition is a toxic one, and the contents of the bullæ are always sterile.

(6) *Epidermolysis bullosa* is an hereditary condition in which the bullæ appear after slight trauma, chiefly on exposed extensor surfaces.

(7) *Hydroa vacciniforme* is an actinic eruption, almost confined to the male sex, and attacks only the parts of the body exposed to light. It is very rare in young infants.

In all cases of doubt the diagnosis can be confirmed by the examination of fluid from one of the bullæ or vesicles. The discovery of abundant *Staphylococcus aureus* in this fluid is pathognomonic.

PROGNOSIS

In prognosis one must distinguish between the severe exfoliative cases, which run a short course and almost always end fatally, and the mild ones in which the child is not ill, the course is longer, and recovery takes place. Most of the recorded epidemics have begun with one or more cases of the first type, after which the remaining cases have run the more usual mild course. In large epidemics, therefore, the mortality-rate is relatively low; thus Almquist [12] records 134 cases with 4 deaths; Falls [21] 2 deaths in 47 cases, and McCandlish [23] only 3 deaths in 221 cases. In the smaller outbreaks in which the severe initial cases occur in the same way but the spread of infection is rapidly controlled, the percentage mortality naturally appears much higher. Maguire [17] had 8 deaths in 18 cases, and Knowles [32] 10 in 30. Of the 2 fatal cases in our own series of 9 one was due to the initial severe exfoliative lesion, but the other was in a premature child, and the pemphigus appeared to be only a small factor in its causation.

TREATMENT

The treatment falls into three phases: (1) prevention; (2) control of epidemic; (3) treatment of cases. Prevention depends on infants not being handled by anyone who is suffering from, or in contact with, an infective condition; and on scrupulous obstetric cleanliness and a rigorous nursing technique. The prevention and control of outbreaks has been especially studied in America (Olmsted,[33] Dickey,[34] Rood Taylor,[35] and Rulison.[36])

In treatment of the actual cases the most satisfactory results are obtained by frequent cleansing with a mild antiseptic, followed by a dry dressing. Gregorson [37] claims to have obtained good results from repeated exposure to ultra-violet light, whilst Cole and Ruh [18] think that the use of an autogenous vaccine is beneficial. But it seems likely that simpler measures are equally good.

In the Cambridge epidemic the cases were all isolated in a "septic ward"; special nurses who attended no other cases were responsible for the dressings, which were renewed every four hours by day, and once during the night; if the dressings became soiled by excreta they were changed at once. Whenever the skin was dressed, all unbroken blisters were pricked with a sterile needle. In all cases the babies' arms were splinted to prevent the spread of infection by scratching. The five methods of treatment employed were as follows:—

(1) The blisters were pricked with a sterile needle; the affected area was then washed four-hourly with a 1/6000 solution of perchloride of mercury in normal saline at 100° F., and sprinkled with zinc oxide powder,

and covered with a dry dressing. This method was used only for one case.

(2) The blisters were pricked as above, washed four-hourly with warm olive oil, and dressed with calamine liniment containing ichthyol grs. 15 to the ounce. Three cases were treated by this method, and all did well.

(3) The lesions were pricked and washed with olive oil as above, and then dressed with calamine liniment containing 2 per cent. of "white precipitate." This method was used for four cases, and in all it appeared beneficial.

(4) The child was bathed six-hourly in a bath containing ¼ lb. boric acid to 10 gallons of water, and the lesions then dressed with boric acid ointment. The one case in which this treatment was used did well.

(5) A stock *Staphylococcus aureus* vaccine was used in one case, injections of 20 millions, 50 millions, and 100 millions being given at intervals of two days. Practically no reaction followed the administration of the vaccine, and the treatment did not appear to have any effect on the course of the disease.

The methods (2), (3), and (4) all gave good results and there seemed to be little to choose between them.

CONCLUSIONS

Epidemic pemphigus, or bullous impetigo of the newly born, is a highly contagious disease, increasing in incidence. It is due to infection by the *Staphylococcus aureus,* and is usually conveyed by the personnel or impedimenta of the lying-in room. The organism is carried on the skin of the carrier, and is conveyed by direct contact to the skin of the infant. Clinically there are two forms: the severe exfoliative, which is rapidly fatal, and the mild, which tends to run a self-limited course with remarkably little constitutional disturbance. At the onset of an outbreak there are usually one or more severe cases, and the subsequent cases are commonly much milder. The essentials of the treatment are mild antiseptic cleansing and dressing.

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THE EFFECT OF HIGH PROTEIN DIET ON ARTERIAL PRESSURE IN CASES OF HYPERTONY

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IN this investigation an attempt has been made to re-examine the part protein plays in cases of hypertony, as regards both ætiology and treatment. Our object has been to discover the immediate effect which a high and low protein diet may exercise on high blood pressure. It is conceivable that a high protein diet by increasing the serum protein raises the colloidal osmotic pressure and in this way sets a compensatory mechanism in action which increases the hydrostatic pressure. On the other hand, it is possible that the end-products of protein, such as urea, may be factors in causing hypertension. We did not find serum protein consistently increased, and we therefore will deal in this paper with the end-products of protein only.

The plan of investigation was as follows: The patients were confined to bed throughout, and were weighed daily, fluid intake and urinary excretion being charted as a routine. All had a preliminary period, usually a week, in bed without treatment before the investigations commenced. The following régime was then followed:—

Two weeks on low protein diet. This was a diet of 30 g. of protein daily.

Two weeks on high protein diet. (1 lb. lean beef daily, 100 g. protein.)

Two weeks of low protein diet repeated.

The patients were bled, from the veins of the antecubital fossa (1) on the morning on which the observations started; (2) on the 8th day of the diet; (3) on the 15th day. Serum protein was estimated as well as the albumin and globulin ratio. Refractometric readings were taken, and the non-protein nitrogen and urea of the blood were determined; also in some cases osmotic pressure and blood chlorides. A kidney efficiency test was performed in all cases.

The figures set out in the accompanying Table suggest at first sight that high blood pressure is unaffected by alteration of the protein content of the diet from high to low or vice versa. If, however, the non-protein nitrogen (N.P.N.) figures are considered in conjunction with arterial pressure readings, then a relation becomes manifest between high protein diet, high blood pressure, and N.P.N. In cases where a high protein diet does not raise the blood pressure there is an increase of N.P.N.; whereas in cases where it raises the blood pressure conspicu-

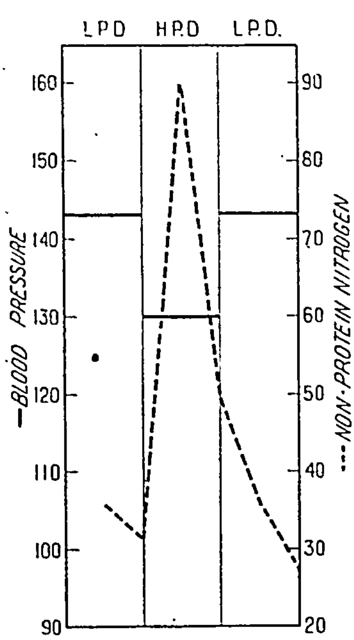

FIG. 1. (Case 4).—Average systolic blood pressure and non-protein nitrogen on low and high protein diets. On a high protein diet the N.P.N. rose while the systolic blood pressure fell.

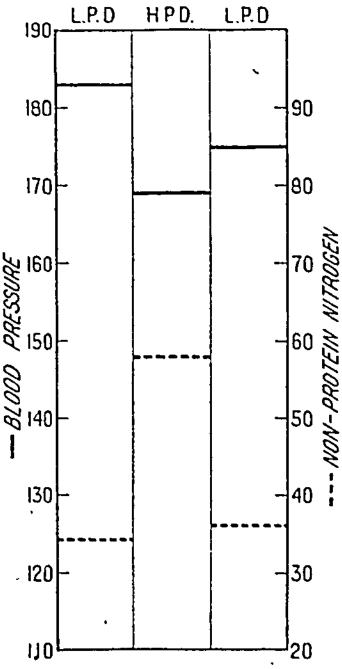

FIG. 2.—Composite curve. Cases 1, 2, and 4. Here, too, the effect of the high protein diet is to lower the systolic blood pressure and raise the N.P.N.

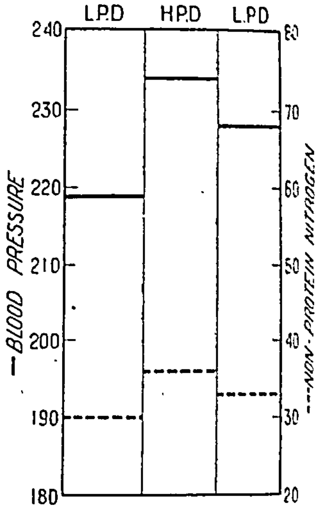

FIG. 3.—Composite curve of three cases (Nos. 3, 5, and 12) in which the effect of the high protein diet was to raise the systolic blood pressure. In these cases the N.P.N. has not markedly increased.

ously the value of N.P.N. does not increase and may even become lower. Comparison of the N.P.N. and urea figures shows clearly that where the pressure falls the N.P.N. rises (Figs. 1–3).

Obviously the rise of pressure taking place after increased protein intake is an adaptation for the purpose of assisting the kidney to remove protein end-products. In cases where the blood pressure does not rise, the end-products accumulate in the blood stream. We have reason to believe that the end-products of protein are not the only substances which raise pressure in this way. Other constituents of the blood in abnormal quantities, such as salt, bring the same adaptive mechanism into action. The cases here summarised belong to different types of hypertony, but those which are usually labelled essential hypertony react in this respect in the same way as those high blood-pressure cases which are associated with frank renal disease. We find that the administration of 30 g. of urea increases the blood pressure; on the other hand the lowering of pressure by sulphur injections results in an increase of the N.P.N.

CONCLUSION

When a high protein diet is given the arterial pressure stands in inverse ratio to the non-protein-nitrogen serum content. Where there is an adequate rise of arterial pressure, the N.P.N. content is not increased, and vice versa.

TABLE SHOWING EFFECT OF LOW AND HIGH PROTEIN DIETS ON BLOOD PRESSURE AND NON-PROTEIN NITROGEN

Case.	Low protein diet.					High protein diet.					Low protein diet.				
	B.P.			N.P.N.		B.P.			N.P.N.		B.P.			N.P.N.	
	Av.	Max.	Min.	8th day.	15th day.	Av.	Max.	Min.	8th day.	15th day.	Av.	Max.	Min.	8th day.	15th day.
1	216/110	240/120	190/100	38	31	205/83	250/100	175/75	50	42	209/98	235/110	196/90	56	33
2	190/66	205/70	180/60	..	..	172/56	190/60	150/50	50	60	173/56	190/60	162/50	32	33
3	211/115	230/130	190/110	33	33	230/117	242/120	220/110	36	47	230/120	236/120	225/120	32	..
4	143/85	148/90	138/80	36	31	130/79	145/85	105/70	90	50	143/91	145/95	138/90	36	27
5	201/108	225/120	175/100	32	36	222/110	245/120	210/100	33	32	..	..	..	..	..
7	145/82	150/90	130/75	24	25	140/84	150/90	135/75	37	31	133/77	140/75	125/80	29	32
8	232/135	255/140	205/130	33	33	220/120	260/130	190/110	33	41	215/117	220/120	190/95	39	24
9	225/122	240/130	220/120	29	32	238/125	240/130	195/110	39	28	220/120	225/120	210/120	..	36
10	145/92	180/100	140/90	34	24	172/100	180/110	120/70	39	39	160/90	170/100	120/75	..	43
11	172/95	205/115	145/80	29	26	163/91	175/100	150/80	36	33	160/92	175/105	150/80	24	28
12	242/124	260/130	200/110	26	35	251/122	270/130	240/115	39	33	254/125	270/130	230/110	31	32

B.P.= Blood pressure (average, maximum, and minimum). N.P.N.= Non-protein nitrogen mg. per 100 c.cm.

CLINICAL AND LABORATORY NOTES

GASTRIC CARCINOMA WITH NORMAL ERYTHROCYTE SEDIMENTATION REACTION

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THE sedimentation reaction depends on the observation that when a sample of citrated blood is taken from a patient with pregnancy, infection, or malignant disease, the red cells fall out of suspension more rapidly than in health, and a clear layer of plasma, whose depth varies with the intensity of the disease, appears within a short time at the top of the tube. The test is increasing in popularity in this country for the detection of obscure organic disease, but the following example shows that it may be negative with advanced malignant disease.

A man of 32 was admitted to this hospital with 2½ years' history of anorexia, nausea, and vomiting. For a year he had had pain between the shoulders and along the right costal margin. He had lost 3 st. in weight. He came to us soon after a stay of two months in another London teaching hospital, where X ray examination of the alimentary system had shown no organic disease, and a diagnosis of nervous dyspepsia had been made. The man looked ill, though physical examination was negative and he was not anæmic. A fractional test-meal showed achlorhydria of the benign type with excess of mucus but no bleeding; unfortunately he vomited when the tube was passed, and the resting contents of the stomach were not examined. A little free hydrochloric acid was secreted after the injection of histamine. The stools constantly contained occult blood.

The erythrocyte sedimentation reaction by the standard Westergren method was normal, 3 mm. in one hour. Thinking that the patient's symptoms might be due to gastritis, I asked Mr. H. W. Rodgers to examine him with the gastroscope, which revealed an ulcer with everted margin near the incisura angularis. On X ray examination there was a persistent filling defect of the pyloric antrum. The sedimentation reaction was repeated by the same technique but by another observer, and again the result was normal, 7 mm. in one hour. Sir Charles Gordon-Watson decided in favour of operation and performed a subtotal gastrectomy for a saddle-back growth of the stomach which extended from the pyloric antrum 3½ inches along the lesser curvature. There were hard enlarged glands along the greater and lesser curvatures, but no other metastases were seen. Sections showed that the growth was a spheroidal-celled carcinoma, and that the neighbouring glands contained secondary deposits.

PRIMARY STAPHYLOCOCCAL PERITONITIS IN A CHILD

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CONSULTING SURGEON TO ARBROATH INFIRMARY, DUNDEE

THE following case of primary staphylococcal peritonitis occurred in the practice of Dr. F. M. Davidson, of Arbroath, and the patient was admitted to the Arbroath Infirmary by Dr. J. W. Tocher, his partner, with whom I saw her in consultation.

A. B., a girl aged 6, complained of feeling unwell on the morning of Sept. 1st, 1934, and vomited in the evening. Next day she had pain and tenderness over the abdomen; diarrhœa developed and she vomited again. During the two following days she became worse. She was given Epsom salts, vomited immediately thereafter, and again had diarrhœa. She was seen by her doctor and admitted to the infirmary on the afternoon of Sept. 5th.

When seen in consultation the child looked very ill. The face was cyanosed, the eyes sunken, and she was semi-stuporose. The pulse-rate was 126; the temperature 101° F. The tongue was coated and the breath foul. Breathing was restrained, and there was limitation of abdominal movement. The whole abdomen was rigid on palpation; tenderness was generalised but greatest to the right of and below the umbilicus. Pneumococcal peritonitis was considered, but in view of the clinical findings a diagnosis of perforated appendix was made and the abdomen was opened by a gridiron incision. As it was opened a very little straw-coloured fluid escaped. The appendix was injected, but was obviously not the primary cause of the condition. Investigation revealed a generalised peritonitis, the terminal ileum being injected and covered with lymph. There was no matting of the coils, no gross distension, and very little fluid in the pelvis. A smear was taken from the pelvis and the appendix was then removed, a rubber dam drain being inserted. The child's condition after operation was precarious, and subcutaneous saline was administered continuously for the first 24 hours. After 48 hours the condition began to improve. Little had escaped by the drain, and this was removed after 48 hours. On the 15th, ten days after operation, the pulse and temperature were normal. The child was discharged well sixteen days after operation.

The smear and appendix were submitted to Prof. W. J. Tulloch, of the bacteriological department, University of St. Andrews, and he reported that the swab from the peritoneum gave a pure culture of *Staphylococcus aureus*—a finding borne out by microscopical examination. Staphylococci were also recovered from the appendix, together with *Bacillus coli*.

The staphylococcus is referred to in most surgical text-books as an uncommon cause of primary peritonitis, and few cases of this kind appear to be on record.

Fishbein [1] found in 125 cases of peritonitis, 32 primary. Among these staphylococci were found 12 times, 3 times in pure culture and 9 times mixed. Neff [2] states that "the infective organism is commonly the pneumococcus or streptococcus, occasionally a staphylococcus or colon bacillus." De Sanctus and Nichols [3] in 21 cases of primary peritonitis found in 1 *Streptococcus hæmolyticus* and *Staphylococcus aureus* together. Obadalek [4] reports 1 fatal case (staphylococcal) in 50 genuine cases of peritonitis in children. Lazarus [5] investigating 42 consecutive cases of acute peritonitis in children found pneumococci and streptococci most often. Other organisms were *B. coli* (2 cases), staphylococcus (1 case), and unidentified organisms (4 cases), either alone or with streptococci.

The probability is, however, that many cases are not reported, and that many others are ascribed to peritonitis of appendicular origin. It seems reasonable to suppose that the source of infection is the alimentary tract, and that the condition arises after a "stomach upset" in which the digestive juices no longer exercise their normal protective functions. A fatal enteritis due to staphylococcal infection can arise under such circumstances. In the case under review stomatitis and gingivitis were reported on the 15th, but in view of the patient's post-operative condition too much stress cannot be laid upon this as evidence of a definite infection from above.

I am indebted to Dr. M. Schwartz, [illegible] medical officer at Arbroath Infirmary, for the notes on this case.

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A CASE OF CONCEALED ACCIDENTAL HÆMORRHAGE

By A. W. Vaisey, M.B. Camb.

LATE HOUSE PHYSICIAN, ST. THOMAS'S HOSPITAL MEDICAL UNIT

Concealed accidental hæmorrhage in its classical form is a rarity, being, like lithopædion and locked twins, very much of a text-book condition. Although the following case comes strictly into the category of a mixed hæmorrhage, the bleeding was almost entirely internal, and the case presented several interesting features.

A woman of 30, with a history of two previous confinements, both normal, was admitted to hospital complaining of slight brownish discharge from the vagina for the past fourteen days. She believed herself to be about six months' pregnant, and stated that for the past few days she had been growing rapidly paler, in spite of only a slight external staining per vaginam. There was no abdominal pain or backache, no increase in the respiratory excursions, and no thirst; in fact, there was no discomfort whatever. The pulse-rate was 76, and the temperature subnormal. The general physique was good, but great pallor of the skin and mucous membranes confirmed the patient's story. There was a complete lack of striæ gravidarum; abdominal palpation revealed a uterus that corresponded in size with a full-term pregnancy, but was everywhere unusually tense although not in the slightest tender. No fœtal parts could be made out; nor could the fœtal heart sounds be heard. Vaginal examination revealed a high cervix with an os just admitting one finger; the presenting part could not be determined, although it was certainly not head nor placenta.

Although there were no symptoms of concealed hæmorrhage apart from the obvious pallor, no other diagnosis could be entertained, and a conservative attitude was adopted. An initial dose of morphia gr. $\frac{1}{4}$ was given after the examination, the foot of the bed raised on 6 in. blocks, and thereafter pot. brom. and chloral hyd. āā grs. xx. four-hourly was given, with fluids ad lib. There was no change for three days except that the vaginal loss was slightly increased; a small daily enema sufficed for the bowels.

On the fourth day, with dramatic suddenness, a rigor appeared, with profuse sweating, pulse 120, and temperature 102° F. There was still no alteration in the respiratory excursions, and no abdominal pain or tenderness. Opoidine gr. $\frac{1}{3}$ was at once administered, and the second and final vaginal examination revealed no change in the condition of the cervix. Ten hours later the rigor, pulse-rate, and temperature had subsided, when for the first time the patient complained of abdominal pain, and within five minutes she was delivered precipitately of footling, placenta, about 30 oz. of blood clot, and remainder of fœtus, in that order. The fœtus, which was slightly macerated, corresponded to about 32 weeks gestation; the placenta was heavily infarcted. For an hour the patient was considerably shocked, but an injection of 10 units of pituitrin, given immediately, gave an entirely satisfactory uterine contraction and retraction, and there was practically no post-partum oozing. Rectal salines with brandy 2 drachms four-hourly were prescribed, and in 24 hours the patient was remarkably fit.

Unfortunately convalescence was not uneventful, as 48 hours after delivery the temperature rose to 103° F. and the lochia became offensive. Intensive treatment, however, overcame the infection, and then with the aid of massive doses of iron the patient was discharged well six weeks later.

The interest of this case consists in (1) the very large internal hæmorrhage which must have occurred before admission, with practically no symptoms except pallor; (2) the occurrence of a single rigor which had completely abated before the onset of precipitate labour; and (3) a recovery which showed every sign of being complete and rapid if puerperal infection had not intervened.

MEDICAL SOCIETIES

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION

At a meeting of this society on May 28th, with Dr. E. Pickard, the president, in the chair, Dr. D. S. Russell spoke on

Some Aspects of Pituitary Function

After a few introductory remarks on the anatomy of the pituitary body and hypothalamus, she discussed the cytology of the anterior lobe and gave the reasons for the belief that the acidophil (alpha) and basophil (beta) cells were derived by transition types from the non-granular or so-called chromophobe cells. Recent work by Severinghaus on the Golgi apparatus of these cells had pointed strongly in the same direction; the form of the apparatus, as demonstrated by osmic acid methods, was different in the two types of granular cell and corresponding forms of the apparatus were to be found in the chromophobe cells. From this it was to be inferred that each chromophobe cell was predestined as a precursor of one or other of the two types of granular cell. There was no doubt that the so-called pregnancy cell was of the transitional acidophil type and not of the chromophobe series, as some writers had asserted.

Recent work on the isolation and investigation of the various anterior lobe hormones was then briefly reviewed. At the present time the existence of seven or eight different hormones had been widely accepted, and there were indications that one or two more might be added to the list in the near future. Human pathology as yet threw little light on the sites of elaboration of these hormones in the anterior lobe with the outstanding exception of the growth hormone. There was incontrovertible evidence that this is secreted by the acidophil cells. The possibility that the gonadotropic hormone is formed by the basophil cells had been entertained in many quarters but could not be regarded as an established fact. The effects upon the organism of partial and total ablation of the anterior lobe had been clearly demonstrated experimentally and were recognised in human pathology both in the pituitary cachexia of Simmonds's disease, associated with complete or almost complete destruction of the anterior lobe, and in the combined dwarfism and infantilism usually described as of the Lorain type. Dr. Russell described a case of acute pituitary cachexia following upon division of the stalk in a case of suprasellar Rathke's pouch cyst and also one of pituitary dwarfism, associated with a large suprasellar Rathke's pouch cyst.

Excessive pituitary secretion, she said, was exemplified in human pathology by gigantism and acromegaly in which the disturbance was correlated with an

of Manouvrier. This shows clearly that, while mesatiskelety gives an index of 90, let us say, macroskelety may give one of 100 and brachyskelety one of 81 or 82, but it also shows that, whereas the normal index remains practically constant during the years of puberty, the two subnormal states increase their differences. When this is taken into account with the marked changes in the development of the upper and lower parts of the thorax in these states, it seems likely that the facts possess some clinical interest; in any case they offer a clearer conception of the conditions than that presented by the rather indefinite "sthenic" and "asthenic" types of constitution of which one hears occasionally. A chapter on the little-known effects of puberty on the pigments of the eye brings to an end this important book, which will doubtless remain the classic work on the bodily facts of growth.

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THE LANCET

LONDON: SATURDAY, JUNE 8, 1935

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In an article published on another page of this issue Dr. POOLE and Dr. WHITTLE offer the alternative title of "impetigo contagiosa et bullosa neonatorum" for what is more generally called pemphigus neonatorum. That the eruption is clinically a variety of bullous impetigo there is no doubt, but unlike the common form of impetigo it is not caused by a primary infection with a streptococcus, but with a staphylococcus. Now staphylococci tend to involve the pilosebaceous follicles; their toxins excite a diapedesis of polymorphonuclear leucocytes, and the more virulent strains are necrogenic. The common and superficial follicular pustule, due to infection around the mouth of a follicle by the *Staphylococcus albus*, is the simplest type-lesion. The so-called impetigo of Bockhardt, better termed acute porofolliculitis, is merely an eruption of numerous follicular pustules, due in mild cases to an *albus* and in the more severe to an *aureus* or *citreus* strain. The boil is caused by a deeper invasion of a follicle by *Staph. aureus*, and is characterised by the intensity of the inflammatory reaction, and by perifollicular necrosis, which results in the formation of the core. The carbuncle is merely an agglomeration of boils accompanied by massive and diffuse tissue necrosis. The follicular involvement, the polymorphonuclear exudate, and the tendency of virulent strains to produce necrosis are thus the principal characteristics of staphylococcal invasion of the skin. Streptococci, on the other hand, have no predilection for the follicles, are less pyogenic, and tend to provoke an exudation of clear serum, containing only a few leucocytes. The initial vesicle or bulla of the impetigo of Tilbury Fox illustrates these features, and its subsequent invasion by polymorphonuclear leucocytes is doubtless attributable to the superadded infection by staphylococci, which always occurs in streptococcal impetigo.

Theoretically, therefore, pemphigus neonatorum, in which the initial lesion is a vesicle or bulla, containing at first clear serum, should be streptococcal in origin, and SABOURAUD certainly held this view. But many investigators have established the staphylococcus as the causative organism, and this is upheld by Dr. WHITTLE's own researches in eight cases of the disease. Like HAXTHAUSEN[1] he employed special media favourable to streptococci and inimical to staphylococci, but in no case were streptococci cultured. Many years ago JADASSOHN[2] described a bullous impetigo, affecting particularly the extremities, and due not to a streptococcus but to a staphylococcus, and HAXTHAUSEN has confirmed this. Moreover, BENIANS and JONES[2] noted that, when an adult was infected from handling an infant with pemphigus neonatorum, the resulting lesions tended to be of the bullous type described by JADASSOHN. They suggested that the bullous reaction of the skin, which is more characteristic of streptococcal infection, might be a response to a special strain of *Staph. aureus*. This question arises again in the rare disease, acrodermatitis continua, of which the dermatitis repens of Crocker is the localised variety. From cases of this disease a strain of *Staph. aureus* has been isolated from the skin, mucous membrane of the mouth, and from the fæces, which grew readily on media that inhibit the growth of ordinary strains. In this condition, however, the primary cutaneous lesion is a nonfollicular intraepidermal abscess, formed by infiltration of the rete with polymorphonuclear leucocytes, whereas the contents of the bullæ in pemphigus neonatorum are initially clear, as in streptococcal impetigo. In these two atypical forms of staphylococcal infection, therefore, it would seem that special strains may be responsible for the peculiar features of the eruptions. Dr. POOLE and Dr. WHITTLE agree with MCCANDLISH in regarding the exfoliative dermatitis of Ritter von Rittersheim ("Ritter's disease") as a severe and usually fatal form of pemphigus neonatorum. Since such fatal cases do occur, particularly at the beginning of of Manouvrier. This shows clearly that, while mesatiskelety gives an index of 90, let us say, macroskelety may give one of 100 and brachyskelety one of 81 or 82, but it also shows that, whereas the normal index remains practically constant during the years of puberty, the two subnormal states increase their differences. When this is taken into account with the marked changes in the development of the upper and lower parts of the thorax in these states, it seems likely that the facts possess some clinical interest; in any case they offer a clearer conception of the conditions than that presented by the rather indefinite "sthenic" and "asthenic" types of constitution of which one hears occasionally. A chapter on the little-known effects of puberty on the pigments of the eye brings to an end this important book, which will doubtless remain the classic work on the bodily facts of growth.

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At the present time the term is practically restricted to the first three diseases, and should in our opinion be abandoned for the first and third.

In an article published on another page of this issue Dr. Poole and Dr. Whittle offer the alternative title of "impetigo contagiosa et bullosa neonatorum" for what is more generally called pemphigus neonatorum. That the eruption is clinically a variety of bullous impetigo there is no doubt, but unlike the common form of impetigo it is not caused by a primary infection with a streptococcus, but with a staphylococcus. Now staphylococci tend to involve the pilosebaceous follicles; their toxins excite a diapedesis of polymorphonuclear leucocytes, and the more virulent strains are necrogenic. The common and superficial follicular pustule, due to infection around the mouth of a follicle by the *Staphylococcus albus*, is the simplest type-lesion. The so-called impetigo of Bockhardt, better termed acute porofolliculitis, is merely an eruption of numerous follicular pustules, due in mild cases to an *albus* and in the more severe to an *aureus* or *citreus* strain. The boil is caused by a deeper invasion of a follicle by *Staph. aureus*, and is characterised by the intensity of the inflammatory reaction, and by perifollicular necrosis, which results in the formation of the core. The carbuncle is merely an agglomeration of boils accompanied by massive and diffuse tissue necrosis. The follicular involvement, the polymorphonuclear exudate, and the tendency of virulent strains to produce necrosis are thus the principal characteristics of staphylococcal invasion of the skin. Streptococci, on the other hand, have no predilection for the follicles, are less pyogenic, and tend to provoke an exudation of clear serum, containing only a few leucocytes. The initial vesicle or bulla of the impetigo of Tilbury Fox illustrates these features, and its subsequent invasion by polymorphonuclear leucocytes is doubtless attributable to the superadded infection by staphylococci, which always occurs in streptococcal impetigo.

Theoretically, therefore, pemphigus neonatorum, in which the initial lesion is a vesicle or bulla, containing at first clear serum, should be streptococcal in origin, and Sabouraud certainly held this view. But many investigators have established the staphylococcus as the causative organism, and this is upheld by Dr. Whittle's own researches in eight cases of the disease. Like Haxthausen[1] he employed special media favourable to streptococci and inimical to staphylococci, but in no case were streptococci cultured. Many years ago Jadassohn[2] described a bullous impetigo, affecting particularly the extremities, and due not to a streptococcus but to a staphylococcus, and Haxthausen has confirmed this. Moreover, Benians and Jones[2] noted that, when an adult was infected from handling an infant with pemphigus neonatorum, the resulting lesions tended to be of the bullous type described by Jadassohn. They suggested that the bullous reaction of the skin, which is more characteristic of streptococcal infection, might be a response to a special strain of *Staph. aureus*. This question arises again in the rare disease, acrodermatitis continua, of which the dermatitis repens of Crocker is the localised variety. From cases of this disease a strain of *Staph. aureus* has been isolated from the skin, mucous membrane of the mouth, and from the fæces, which grew readily on media that inhibit the growth of ordinary strains. In this condition, however, the primary cutaneous lesion is a non-follicular intraepidermal abscess, formed by infiltration of the rete with polymorphonuclear leucocytes, whereas the contents of the bullæ in pemphigus neonatorum are initially clear, as in streptococcal impetigo. In these two atypical forms of staphylococcal infection, therefore, it would seem that special strains may be responsible for the peculiar features of the eruptions. Dr. Poole and Dr. Whittle agree with McCandlish in regarding the exfoliative dermatitis of Ritter von Rittersheim ("Ritter's disease") as a severe and usually fatal form of pemphigus neonatorum. Since such fatal cases do occur, particularly at the beginning of an epidemic, a study of the possible sources of infection is of great importance. This question is fully discussed by Poole and Whittle. As a rule contact of the infant with a pyococcus carrier, whether direct or by articles of clothing, is clearly responsible. A medical man suffering from impetigo of the scalp and neck noticed that in four out of the last six confinements he had attended the babies had developed *pemphigus neonatorum*, of which three died.

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[1] Haxthausen, H.: Ann. de derm. et de syph., 1927, viii., 201.

[2] Jadassohn, J.: Die Pyodermien, Halle, 1912.

[3] Benians, T. H. C., and Jones, B. H.: The Lancet, 1929, i., 174.

In considering the response to treatment it must be borne in mind that in staphylococcal as in streptococcal impetigo we are dealing with an acute infective disease. Although in both conditions suitable local treatment may, perhaps, limit the spread of infection and hasten the healing of existing lesions, it is very doubtful whether it actually shortens the duration of the attack; for recovery appears to depend on the spontaneous development of immunity to the infecting organisms. In pemphigus neonatorum it is probable that the fatal cases are doomed from the onset, and that the others recover no matter what line of treatment is adopted. This view is supported by the observations of Poole and Whittle, for they state that in the benign cases the appearance of fresh crops of bullæ suddenly ceases from 12 to 20 days after the onset, and that then rapid healing takes place. The same is true in the majority of acute outbreaks of streptococcal impetigo, and it is obviously the development of sufficient immunity to the infecting organisms that accounts for the subsidence of the attack. Moreover the authors employed five different methods of treatment and the results were much the same in each. They are to be congratulated upon their clear and convincing discussion of a potentially fatal infection. In the present state of our knowledge preventive measures are clearly of greater importance than is the treatment of the disease itself.

THE ABATEMENT OF NOISE

The annual general meeting of the Anti-Noise League was held last week in the Science Museum, South Kensington, when Lord Horder, the chairman of the League, presided over a large gathering which was addressed by the Prime Minister. An accompanying exhibition in illustration of the production of noise and its possible remedies was opened by the Prime Minister and must bring before the public and the medical profession both the serious nuisance with which the public puts up through the prevalence of noise, and the many practical steps which can be taken to abate that nuisance. The League has published an official handbook surveying many aspects of the problem, and to this the chairman of the League supplies a brief preface in which he assumes that the nuisance of noise as a disturber of human happiness has been generally accepted—a point which is shown by the fact that needless noise is already being suppressed wherever possible. But the range of possibility must be extended, for the amount of noise which remains to be got rid of is very great. The directions in which further measures can be taken are indicated in the handbook, whose contents call for earnest attention. Grumbling at the additional burden to life inflicted by noise is widespread; the League exists to give practical effect to that grumbling by securing effective remedies.

What amount or character of noise can be made without an offended public or individual having the right of redress against those responsible for its origin is rendered hard to determine through the fact that there is no legal definition of nuisance; but Mr. H. G. Strauss, K.C., by setting out cases where injunctions have successfully been obtained, helps us to appreciate what very considerable relief may exist if the public realised its powers, and also the very real menace to health brought about by needless din. Air Vice-Marshal Sir David Munro, secretary of the Industrial Health Research Board, describes in the handbook two experiments carried out by the Board which went to show that the reduction of noise intensity effected by using ear defenders was accompanied by an increase in the efficiency of the workers of about 8 per cent. As in these experiments the good effect was found to be neither temporary nor to occur only in individuals when first exposed to a noisy environment, but was shown to exist among those who had for years been accustomed to excessive noise as a normal accompaniment of their work, it follows that the tolerance of excessive noise may never be completely acquired, and that those who dismiss the possible damage to workers and work in factories with the facile consideration that "the men are used to it," will have to revise their opinion. These experiments were dealing only with an excessive noise of a sort to which the public is not exposed, but Wing-Commander T. R. Cave-Browne-Cave, professor of engineering, University College, Southampton, writing on noises caused by motor transport, approached the subject at a point which concerns us all. We learn, as the result of an inquiry initiated in the *Times* by Sir Henry Fowler, chairman of a special committee of the British Association appointed to consider the question, that the noises which try the public most are those caused by motor bicycles and inadequately silenced cars, the humming of aircraft being also frequently complained of. The subject of mechanical silencing is discussed in considerable detail by Prof. Cave-Browne-Cave, who shows two very satisfactory things, that effective silencing is more easily obtained than the noise in our streets would have led one to suppose, and that manufacturers are on the alert, and are ingenious and anxious to put down noise. The last is amply proved by the display in the exhibition of numerous effective appliances for bringing about the quiet running of machinery, subduing the reports of exhaust and other noises associated with motor traffic, and mitigating noise within buildings.

The Prime Minister, in addressing the meeting, was eloquent in a diatribe against the callousness and vulgarity which sanctioned the production of much of the noise amidst which we live, while Sir Henry Richards, chairman of the executive committee of the League, brought the question more closely within medical range by stressing the

.in and evil influences which invalids and children cur through being subjected to perpetual noise. nd if noise exercises deleterious influences upon lult and industrial workers, how much more must have evil repercussions upon the sickly, the licate, and the young ? It is right to remember at the young love making a noise, and Lord ORDER has pointed out that it is unkind to ppress this natural instinct ; he would allow the illest use of the lungs and the loudest and shrillest ys in the nursery or in the playing field. But ese are not the places where the invalid tries to st or the child to sleep. The arguments in the andbook published by the Anti-Noise League, and e devices brought together for consideration in e exhibition on view for the next month at the cience Museum, should secure for the League wide upport in its attempts to stamp out needless oise. The law has shown itself sympathetic, and gislation will surely follow upon public demand uch as the League will organise.

THE PHYSIOLOGY OF THE FŒTUS

IT is usually taken for granted that the specific unctions of cells are in abeyance when they are ndergoing growth or proliferation. It is not urprising, therefore, that our knowledge of fœtal physiology is that of the development of the various organs rather than that of the work which they actually perform. Prof. J. BARCROFT and his colleagues during the last few years have shown that the reverse side of the picture is by no means a blank. They are beginning really to understand the respiration and circulation of the fœtus. Their earlier observations were reviewed by Prof. BARCROFT in our columns two years ago[1] and in the Croonian Lecture which he gave before the Royal Society last month he was able to add the considerable results since obtained.

The elaborate technique of experimental physiology has here amply justified itself by revealing the apparent anomalies which gave rise to these investigations. Measurement of fœtal blood flow and oxygen usage had been attempted by previous workers without much success, but of recent years more consistent measurements have been obtained, notably by the Cambridge school. They have been able to show conclusively, in the goat, that if the hæmoglobin of the fœtus and the hæmoglobin of the mother had the same properties, and if oxygen could only pass from one to the other across the placental membrane by diffusion, the fœtus could not possibly obtain sufficient oxygen to maintain life during the latter part of pregnancy. The only way in which the mother can ensure an increasing oxygen-supply to the fœtus is by increasing the volume of the blood passed through the placenta in unit time and keeping this blood as fully oxygenated as possible. Owing to the fact that the fœtus grows in size at a much greater rate than does the placenta, and by its increased blood flow abstracts the maximum amount of oxygen from the maternal blood, these maternal mechanisms must inevitably break down. How then is the life of the fœtus preserved ? A study of the oxygen dissociation curves of fœtal and maternal hæmoglobin shows that in most animals the maternal curve is depressed and moved to the right, while the fœtal curve is moved to the left. This means that at a given pressure the available oxygen will distribute itself in unequal volumes between the two hæmoglobins, the fœtal taking the greater share. The less the actual tension of oxygen the more marked is this disparity in distribution. There is yet much work to be done concerning the nature of this difference between fœtal and maternal blood. The maternal hæmoglobin does not actually change, but its properties are modified by the diminution in alkali reserve which takes place during pregnancy. Fœtal hæmoglobin, on the other hand, shows definite but perhaps chemically slight differences from that of the adult, and these differences are of very great physiological importance. The nature of the conversion after birth of the fœtal type of hæmoglobin to the adult type remains undetermined, but raises interesting questions with regard to the storage of iron during this stage, and the occasional occurrence of icterus neonatorum. We must be cautious, however, in transferring these results uncritically from animals to man, for in his Croonian Lecture Prof. BARCROFT states that the affinities of the human hæmoglobins are themselves reversed, although the properties of the bloods assume the same relationship as in other animals when the hæmoglobin is in its normal form enclosed in corpuscles.

Another noteworthy contribution to the physiology of the fœtus, very much bound up with the foregoing, is the confirmation by physiological methods of the crossing of the blood streams in the right auricle, the arterial blood from the placenta being diverted to the head region, and the venous blood returning from the head being directed back to the placenta and the lower part of the body. It is significant that the liver receives the fully arterialised blood first, even before it gets to the heart, and that the " head " is much more extensive than was at one time believed. The arterialised blood from the aortic arch actually finds its way to all the thoracic part of the body, and to nearly the whole of the spinal cord. Most of the important parts of the body, therefore, receive truly arterial blood, although their requirements of oxygen are modest. This is largely explained by the lack of any necessity for heat production in the fœtus, and the absolute flaccidity of the muscles. So long as the experimental fœtus is kept in a warm bath, electrical records show no action currents revealing " tone " in the muscles, but such currents begin directly cold air gains access to the skin. There is, of course, a certain amount of " spontaneous " muscular movement which is probably reflex in nature, reflexes originating in cutaneous stimuli having been shown to be well established half-way through pregnancy ; but the oxygen usage just before birth is only about one-fifth of that immediately afterwards. We look forward with confidence and interest to the extension of this work, already assuming concrete form in many directions. It has opened up a practically virgin soil, which has been cultivated with much ingenuity.

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[1] THE LANCET, 1933, ii., 1021.

ANNOTATIONS

THE BIRTHDAY HONOURS

As is appropriate for a year of jubilee, the list of honours conferred by the King on his birthday last Monday is an unusually long one. The names set out on p. 1358 represent many kinds of work in many kinds of place, and there is unbounded effort and service behind them. The list as a whole reflects the very proper tendency towards wider recognition of work done in official positions—work which is otherwise too often taken for granted. There are some names, however, which represent achievement mainly or altogether outside public office, and first among these stands that of Sir Gowland Hopkins, president of the Royal Society, who is granted the highest possible distinction in membership of the Order of Merit. On retirement from his many years at the Board of Education and the Ministry of Health, Sir George Newman is made a knight grand cross of the Order of the British Empire; while in the Royal Victorian Order, associated with personal service to the Royal Family, Sir Cooper Perry becomes a knight grand cross, and Mr. Walton and Mr. Barrington-Ward knight commanders. Among other new knighthoods two in particular are for "freelance" service—those of Prof. Arthur Hall and Dr. P. P. Laidlaw, F.R.S. Dr. Hall's honour is granted for fine contributions to medicine with special reference to the health of industrial workers, while Dr. Laidlaw, after years of fruitful investigation both in physiology and pathology, has, with his collaborators at the National Institute of Medical Research, achieved the prophylaxis of distemper in dogs and has recently had striking success in the study of influenza. Outside the stricter confines of medicine there are several other new knights whom we may gladly mistake for members of the medical profession. Prof. Joseph Barcroft (who holds, indeed, an honorary medical degree from Louvain) has done much to increase the fame and usefulness of the Cambridge physiology school, and the medical implications of his work are brought out on the preceding page; Mr. L. J. Brock has won a high reputation by his work as chairman of the Board of Control; and Prof. J. C. M'Lennan, the Toronto physicist, has given valuable assistance in this country to those responsible for the allocation and use of radium.

THE VOLUNTARY HOSPITAL PRINCIPLE

At the annual conference of the British Hospitals Association held at Leamington last week, the possibility of maintaining the voluntary hospital system was discussed in a paper presented by Lord Cozens-Hardy and Mr. C. A. Wells, respectively chairman of the Liverpool Hospitals Commission and assistant surgeon to the Royal Southern Hospital, Liverpool. Public support for voluntary hospitals, said Lord Cozens-Hardy, had never been more generous than to-day, but the Local Government Act of 1929 had plainly threatened the very existence of the voluntary hospital system. The proper and indeed the only possible answer in his opinion was to make the system so strong, efficient, and attractive that its essential characteristics would be left unchanged; to ensure this some machinery must be provided through which voluntary hospitals could speak with one voice and coöperate with public authorities, and this implied a speedy amalgamation of too numerous units and the preparation of a considered programme. It was pointed out in discussion that the London County Council had set an example of efficiency in standardisation and group-buying for hospitals which the voluntary hospitals could not pretend to equal, and this example must be followed without delay. The house governor of one of the principal Birmingham hospitals said that the position in Birmingham was as complicated and difficult as in Liverpool, and he urged the conference to concentrate on the larger centres. The single hospital area at the moment was made relatively safe by a local patriotism unknown among the larger groups. A representative of the Ministry of Health assured the conference of the benevolent interest of the Ministry in the voluntary hospitals and agreed that Lord Cozens-Hardy's proposals if carried out would greatly lighten the task of the Ministry. At the conclusion of the conference a statement was issued announcing the setting up of a commission of inquiry to investigate the position of the voluntary hospitals of this country. The reference of this commission is "to take into consideration the present position of the voluntary hospitals of the country; to inquire whether, in view of recent legislative and social developments, it is desirable that any step should be taken to promote their interests, develop their policy, and safeguard their future; and to frame such recommendations as may be thought expedient and acceptable."

RESEARCH IN RADIOLOGY

The report of the *National Physical Laboratory*[1] is a record of routine testing and of research carried out at Teddington during the past year. On the radiological side there has been remarkable expansion and the section of the report written by Mr. G. W. C. Kaye, D.Sc., superintendent of the physics department, contains much of interest to the medical radiologist. During the year the Teddington laboratory, in association with similar institutions on the Continent and in America, prepared a memorandum on X ray units and standardising procedure, which was adopted by the International Committee for Radiological Units at Zurich. The measurement of X rays in international r units has been facilitated by the development at the laboratory of a direct reading instrument for this purpose. Further investigations have been carried out on X ray protection as a result of which data are now available from which the degree of protection from X rays required in various circumstances may be readily computed. This department has tested protective materials and inspected the X ray equipment in use in a large number of hospitals in London and elsewhere. The national radium standard has been exchanged for a new one of exceptionally pure anhydrous radium chloride. A comparison of the old and the new standards by a gamma-ray method carried out at the laboratory showed that the radium content of the old standard agreed to within 3 parts in a thousand with the original certified value, after allowing for radio-active decay during the period 1912–1934. Nearly 12 grammes of radium in some 1700 containers have been submitted to the laboratory for measurement during the year. Periodic leakage tests of containers which are in regular use and minor repairs have been carried out on behalf of various hospitals. The measurement of the content of radium needles by the gamma-ray method necessitates the use of a correction for the absorption of gamma rays in the walls of the needles. As a result of further research, more accurate absorption corrections have been obtained for tubes of platinum and monel metal. The protection of those engaged in radium therapy has been the subject of further study and experiment. Two factors of gamma-ray protection have been studied—viz., remoteness and lead-shielding in a variety of routine circumstances. As a result the minimum shielding and the tolerance working distance have been determined under the various conditions commonly met with in radium therapy. A development which will be watched with interest is the application of X ray crystallographic methods to the study of tooth structures. A technique has been developed for obtaining X ray diffraction patterns directly from the surfaces of teeth. This study, the report states, is still in the preliminary stage, but the results already obtained are encouraging.

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[1] H.M. Stationery Office. Pp. 260. 13s.

TROPICAL MEDICINE IN CHINA

THE first volume of the Transactions of the Far Eastern Association of Tropical Medicine held in Nanking, China, in October, 1934, has already been reviewed in these columns, and now a second equally stout and well-documented volume has followed hard on its heels. This volume, edited with no less assiduity, consists of some 100 papers on such diverse subjects as malaria, medicine, ophthalmology, parasitology, pathology, pharmacology, physiology, plague, public health, quarantine, radiology, and surgery. Under the heading of malaria extensive researches upon treatment (notably with atebrin) and on the prevention of the disease are published. C. D. de Langen and C. J. Storm have written on the modern medical treatment of malaria, from the department of internal medicine of the Medical School of Batavia, Java, where they have enjoyed the collaboration of a physiologist who has recorded the ventricular tracings of the heart and cardiographic curves in monkeys treated with quinine, plasmoquine, and other antimalarial drugs. A. L. Hoops has made a series of observations on the prophylaxis and cure of malaria with atebrin on Malacca Rubber Estates; his experiences have been extremely favourable to the drug.

In the medical section H. S. Gear and H. Pedersen contribute an informative study on diseases common to man and animals in China, which appears to swarm with parasites of all kinds. T. Y. Li and H. Gordon Thompson write on the treatment of *Schistosomiasis japonica* with antimony compounds; they see no reason to doubt the generally accepted view that potassium antimony tartrate is the best method of getting rid of this parasite. Dr. T. S. Kwa has made a study, illustrated by radiograms, of lead encephalopathy in Chinese children, in which the children have been poisoned by their mother's milk; the onset is apparently encouraged by a state of avitaminosis. There are three papers on beri-beri as it occurs at present in China, and it is evident from the work of Y. Y. Ying that this disease is apt to supervene as an important complication in typhoid fever. Teodulo Topacio, of the Bureau of Animal Industry, Manila, has devised a method of transmission by a single trypanosome.

In the section of pharmacology B. E. Read has made a historical investigation of the newer pharmacology and its relation to ancient medicine. Dr. H. A. Bor and Dr. C. J. Storm write of a clinical and experimental investigation of evipan-sodium anæsthesia. Lt.-Col. A. J. H. Russell contributes a paper on plague in India, in which he shows that the plague mortality in that country during the five-year period from 1898–1933 totals over twelve million deaths. To the section of surgery J. Gray and H. Gordon Thompson have contributed a readable paper on surgical complications of parasitic diseases, and the volume ends with a series of papers upon vesical calculus amongst the Chinese. The fact that these transactions have appeared within a few months of the congress adds to their interest.

DIAPHRAGMATIC HERNIA

WE have already drawn attention[1] to the symptoms which, when confirmed by radiological evidence, often enable a diagnosis of diaphragmatic hernia to be made with some confidence before operation. Sir Thomas Dunhill, in an Arris and Gale Lecture delivered before the Royal College of Surgeons,[2] has given an account of 25 patients suffering from various types of this condition, on 6 of whom he has successfully operated. He draws the conclusion from his records that the symptoms in a case of diaphragmatic hernia strongly suggest their origin; and that, when the patient has an œsophagus of normal length, operation is able to cure the distressing symptoms, and usually carries with it a risk less than that inherent in the disease. Unfortunately the commonest type is that associated with a short œsophagus, the cardia being situated some distance above the œsophageal orifice in the diaphragm; 14 of Dunhill's cases were of this nature, and for such cases no radical cure has as yet been planned. The proportion of "diaphragmatic herniæ" which are really attributable to a short œsophagus is so high that it may constitute a pitfall for the radiologist. In one of Dunhill's cases the original diagnosis was "short œsophagus." A lateral X ray picture, however, showed an œsophagus of normal length lying behind the stomach, a large part of which was situated in the posterior mediastinum. Complete relief of the very pronounced symptoms followed withdrawal of the stomach from the thorax and closure of the gap. Had the original X ray diagnosis been accepted, the patient would never have been given the chance of operation. The short œsophagus is, in Dunhill's opinion, a definite failure in development, and a cause of symptoms which tend, once they have appeared, to be progressive. It is not to be dismissed as a mere extension upwards of the gastric type of mucosa. Hydrostatic pressure from below, and the suction effects of inspiration, tend to increase the herniation of the stomach, while distension of the thoracic loculus and rotation of the stomach on its long axis may easily kink the œsophagus and may cause pressure effects on the pericardium. Cardiospasm also tends to occur, and in some cases there is an organic stricture of the œsophagus; gastric ulceration has also been reported. The causes of dysphagia and of thoracic pain and oppression are thus numerous, and the reasons for the progression and inconstancy of the symptoms explained.

In the short œsophagus type of hernia, and in para-œsophageal hernia, as described by Prof. von Bergmann, Dr. A. F. Hurst,[3] and others, there is no developmental defect in the diaphragm. In the other types of diaphragmatic hernia, failure either of the normal process of closure of the pleuroperitoneal canal, or of muscular transformation of the membranous diaphragm can be recognised. In the process of muscularisation, Dunhill points out, the crura are last to develop, and he believes that non-development of one or of both crura is an important cause of hernia. Thus, although he allows that hernia at the costovertebral angle in infants is probably due to a persistence of the pleuroperitoneal canal, in adults a definite sac is present, illustrated in each of the three cases which he himself describes, and his impression is that congenital absence of the left crus of the diaphragm is the underlying cause. Congenital non-development of both crura accounts for the type of hernia which, as mentioned above, may be mistaken for a short œsophagus. There is no attachment of the diaphragm posteriorly in the region of the aorta and œsophagus. As might be supposed, a satisfactory operative closure of the defect is not easy; but, nevertheless, this operation has had much clinical success. Herniæ through the retrosternal attachment of the diaphragm and through a defect in the left dome of the diaphragm were found in three other cases, in two of which operation was successfully performed.

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[1] THE LANCET, 1934, i., 638.

[2] Brit. Jour. Surg., 1935, xxii., 475.

[3] Guy's Hosp. Rep., 1934, lxxxiv., 43.

The symptoms in these cases are related either to the obstructive effects on the gastro-intestinal tract, or to pressure on the thoracic contents. Thus, in some cases the main complaint is of a sensation of bursting and of tightness and pain across the chest; in other cases, indigestion, vomiting, or hæmatemesis predominates. It is not unusual for both types of symptoms to be associated, and the patient may be actually afraid to eat, though badly wanting food, or be unable to turn over comfortably in bed. It is important to recognise that in herniæ through a large diaphragmatic defect, in which there are no adhesions, the abdominal contents enter the sac only at intervals and may be completely absent from the thorax at the time of radiological examination, or at operation; where the abdominal return of the organs is obstructed, the condition of thoracic herniation, once it appears, must be progressive. In cases which are inoperable a certain amount of relief may follow the use of a stomach pump or the passage of a bougie.

THE DENTAL SIGN

OPENING the twenty-eighth session of the Dental Board of the United Kingdom Sir Francis Dyke Acland spoke of the exhibition of signs as a means of notification of dental practice. The Dental Board, he said, had been in touch with the British Dental Association, the Incorporated Dental Society, and the Dental Public Service Association in the matter; representatives of all these organisations had expressed agreement with what he believed to be the policy of the Board. Sir Francis then restated in a few words the principles of this policy. "We try," he said, "to pursue not a static but a progressive policy; one cannot bring everyone in every place up to exactly the same standard at any given time. But a great many signs have in some places (particularly seaports or commercial centres like Hull, Newcastle-on-Tyne, and Dundee) habitually, and in other places sporadically, been beyond what is necessary for reasonable notification of the place of practice; and the Board are bound to pursue progressively attempts to secure improvement. New entrants to the profession, therefore, will be well advised to realise that it is unwise to assume that the most conspicuous signs which they can find already being exhibited by any of their fellow-practitioners in their district at the moment can safely or properly be accepted as setting the standard of what they should themselves exhibit." Sir Francis went on to express a hope that friendly agreement would be reached between the Board and the dental organisations about the means to be adopted for effecting improvement. The British Dental Association had, he said, conducted a survey recently in which definitely undesirable matters were reported, e.g., a dentist in Dundee with five large plates, a lettered lamp, a V-shaped sign with 4-foot sides, and four window signs; in Newcastle-on-Tyne a dentist with a plate, a door sign, a fanlight sign, and three window signs. It is likely that a joint advisory committee will be formed so that agreement may be reached on the action which ought to be taken—in the first instance in certain specific districts. It is essential, Sir Francis added, that exactly the same standard be observed with members of dental organisations as with non-members and that the action taken in any place should be simultaneous.

THE NATURE OF TUBERCULIN

LAST year S. R. Douglas and P. Hartley found[1] that even after autoclaving and prolonged heating at high temperatures solutions of old tuberculin retain not less than half of their original activity. The practical importance of the physical properties of tuberculin are brought out in a recent note[2] by H. J. Parish and R. A. O'Brien. Not only does tuberculin survive autoclaving, but it clings to glass and is not removed by ordinary washing. There is therefore considerable danger of misleading reactions if syringes which have been used for the injection of tuberculin are later used for other purposes. This stability to heat of tuberculin raises the question of its chemical nature. It has generally been considered to be a protein, and F. B. Seibert in 1928 described[3] its preparation as a heat-coagulable protein free from all except traces of carbohydrate. However when such preparations were coagulated by heat a certain amount of activity remained in the uncoagulated portion. A more recent paper[4] by the same author gives an explanation. The molecular weight of active protein prepared from unheated tuberculin is about 24,000, or rather less than that of egg albumin, while that of the preparation from heated tuberculin is from 2000 to 4000. The smaller molecules still give the specific tuberculin reaction, although they are no longer antigenic in the sense of producing antisera on injection. It appears that when tuberculin protein is heated it not only undergoes an internal rearrangement resulting in insolubility, as do proteins such as egg albumin, but also breaks up into smaller molecules. The specific activity resides in relatively small groups of amino-acids which resist disruption.

PNEUMONIA AND DIGITALIS

SOME years ago the statement was made that "the routine giving of digitalis to patients with lobar pneumonia is dangerous."[5] Cohn and Lewis[6] preface their inquiry into this controversial subject by reviewing the statistical method by which this conclusion was reached, namely, the "alternate control system." This system, they agree, is valid so long as the number of cases is sufficiently large, but they reject it as unsuitable for the present purpose in view of the variations in pneumococcal virulence over a period of years and in human susceptibility. Failing a sufficiency of material they prefer an analysis and comparison based on "severity of the disease," and this has involved a preliminary decision as to what should be regarded as unfavourable factors in the course of the disease. The following eight factors have been selected as having an influence on the outcome of pneumonia: type of work (light or heavy); type of pneumococcus; age (above or below 40); alcoholism;

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[1] *Tubercle*, 1934, xvi., 105.

[2] Brit. Med. Jour., May 18th, 1935, p. 1018.

[3] Amer. Rev. Tuberc., 1928, xvii., 394.

[4] *Ibid.*, xxv., 724.

[5] Wyckoff, J., Du Bois, E. F., and Woodruff, I. O.: Jour. Amer. Med. Assoc., 1930, xcv., 1243.

[6] Cohn, A. E., and Lewis, W. H.: Amer. Jour. Med. Sci., April, 1935, p. 457.

bacteræmia; number of lobes involved; cardiovascular affections; and complications. The graphs illustrating the effects of each of these upon mortality are interesting, but, as Cohn and Lewis emphasise, it is usually necessary in practice to consider the effect of several factors at once, and it is doubtful how far their representation conveys a fair impression when the same importance (i.e., unity) is attributed to each. Nevertheless the graphic method does bring out the fact (scarcely unexpected) that mortality increases with the number of unfavourable factors, and it shows a sharp rise in the death-rate when three or more of those enumerated are in operation. That these eight conditions are the ones that really matter in determining prognosis is further indicated by the statement that "when none of the untoward factors was present death was rare, there being only two deaths among 288." A laborious investigation to find whether any particular combination of the eight was particularly harmful yielded no significant results.

Having thus cleared their ground, Cohn and Lewis come to digitalis in pneumonia and begin by stating the known facts—that digitalis acts upon the heart, that its therapeutic value is most evident in auricular fibrillation, that it acts upon the febrile heart, and that it depresses conduction of the cardiac impulse in pneumonia. It is rare to find auricular fibrillation as the *only* untoward factor in the illness, but the investigators feel justified in saying, first, that the chances of those who have it are not worse than those of other patients, and secondly, that digitalis has proved useful when not more than two untoward elements (other than fibrillation) have been present. "When there were more untoward elements, the chances were not worse than they would otherwise have been." Admittedly cautious, these conclusions, based on careful analysis, deserve consideration alongside the statement with which this annotation began—though, as Cohn and Lewis point out, the discrepancy may be due to differences in the methods of investigation. So far as they go, the results of the inquiry suggest that in practice digitalis does not influence the course of lobar pneumonia, except in otherwise favourable cases showing fibrillation or flutter.

ARTIFICIAL SEX HORMONES

THE chemistry and artificial preparation of the gonadal hormones has lately been reviewed by Prof. Butenandt in a lecture given in Berlin,[1] which, especially when it is compared with one he delivered last summer,[2] gives a striking impression of the speed of advance in this field. Gonadal activity can now be accounted for in both sexes by chemically pure, crystalline substances of settled constitution which have been isolated from urine or from the organs themselves. The male hormone is represented by androsterone—isolated first from urine by Butenandt, and recently prepared artificially from cholesterol by the method of Ruzicka—and by "dehydroandrosterone" and "dihydroandrosterone." The œstrogenic hormone is represented by œstrone, œstriol, and œstradiol; the last compound, first prepared by reduction of œstrone, has now been isolated from ovaries by Doisy and his collaborators,[3] and is the most active of the three. The isolation of the corpus luteum hormone from sows' ovaries was announced by four groups of workers last year, and now two methods of artificial preparation from other, more readily available, natural products are known. All these compounds are derivatives of what may be called the steroid nucleus—i.e., they contain the carbon skeleton of *cyclo*pentenophenanthrene common to the sterols and bile acids.

Two tasks remain to complete this scheme of isolation and synthesis. First, there is reason to doubt whether the urinary product androsterone accounts for the whole activity of the testis,[4] or even of crude urine extracts,[5] and laborious efforts to isolate a simple product from testes have so far failed. Secondly, an artificial preparation of œstrone has not yet been achieved, although Honigmann [6] has obtained from ergosterol an active product which resembles equilenin, one of the œstrogenic compounds in mare's urine, but which still has the sterol side-chain attached. It is not likely to be long before the chemistry of the gonadal hormones is completed in these particulars.

IODINE AS A PREVENTIVE OF GOITRE IN MAN AND ANIMALS

FROM time immemorial goitre has been treated by the administration of burnt sponge, but it was not until 1812 that a saltpetre manufacturer discovered iodine in the ash. A few years later Coindet made what Prof. Harington in his Oliver-Sharpey lecture (THE LANCET, May 25th, p. 1200) called his "inspired guess" that the newly discovered element was the active principle of the traditional remedy. This was followed by Chatin's demonstration, which failed to convince the Paris Academy, of a relationship between endemic goitre and environmental deficiency of iodine. The connexion has now been so widely substantiated that, in Prof. Harington's words, "with the possible exception of certain cases in New Zealand, there is no region where goitre is severely endemic in which it has not been possible to demonstrate an environmental deficiency of iodine." Coindet and his immediate followers employed iodine therapy as a curative measure only, but it is now being widely used as a prophylactic, and the International Office of Hygiene published in its monthly bulletin for April the answers to a questionnaire addressed to countries which are in the habit of distributing iodised salt or iodised sweets as a preventive of goitre. The questions were designed to elicit information on the composition, preparation, and presentation to the public of iodised salt or sweets. Replies were received from Germany, Italy, the Netherlands, Sweden, Switzerland, the United States of America, and Yugoslavia, and they are characterised by a considerable measure of agreement.

Practically all the countries adopt the proportion of 10 milligrammes (mg.) of iodide of potassium to one kilo of salt in their preparations, but in Switzerland the dosage is only 5 mg. All the authorities recommend that iodisation should be carried out after the salt has been crystallised and dried. Where it should be done depends somewhat on the source of supply, but, generally speaking, it is considered advisable to add iodide of potassium to ordinary household salt at the factory or warehouse, and to pack it as quickly as possible. America and Switzerland both give a warning against using unduly large containers. In America it has been found that it is possible for the iodine to become separated, and the Swiss report states that the iodine is apt to sink, so that after some lapse of time the top layer may contain only 3·5 mg. and the lowest as much as 6 or 7 mg. per kilo, the middle layer retaining its original strength. This is an indication that iodised salt should not be left long in bulk before being packed.

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[1] Butenandt, A.: Deut. med. Woch., May 17th and 24th, 1935, pp. 781 and 823.

[2] Butenandt: Wien. klin. Woch., 1934, xlvii., 897, 934; see THE LANCET, 1934, ii., 312.

[3] MacCorquodale, Thayer, and Doisy: Proc. Soc. Exp. Biol., 1935, xxxii., 1182.

[4] David, K., and Freud, J.: Acta brev. neerl. Physiol., 1935, v., 31.

[5] Callow, R. K., and Deanesly, R.: Jour. Soc. Chem. Ind., 1935, liv., 508.

[6] Honigmann, H.: Liebigs Ann., 1934, dxi., 292.

The method of packing and distribution is important. All the references to this matter agree in rejecting glass bottles, chiefly on the score of expense. In the Netherlands the iodised salt is packed in parchment bags enclosed in cardboard; in Yugoslavia it is distributed in the same way as ordinary salt, in bags of jute or canvas; Germany finds paper bags enclosed in boxes with compartments preferable to cloth or canvas; America and Switzerland consider cardboard boxes the most suitable, as being practically impermeable to the air, America stating that iodised salt is apt to lose weight when packed in paper or cloth.

In most cases iodised salt is used as a prophylactic only. In Italy it is distributed to the whole population instead of ordinary salt in certain districts subject to endemic goitre, no inconvenience having been suffered from its use. Where iodised salt is not employed iodine is given in the form of chocolate tablets, but this is looked upon as incomplete because it is impossible to distribute sweets to the whole population. In the Netherlands iodised salt is regularly administered as a prophylactic in districts where drinking water or articles of food are deficient in iodine. There is considerable diversity of opinion as to the desirability of giving iodine in the form of sweets. Germany and the Netherlands are definitely unfavourable to this type of treatment, being of the opinion that there is danger of overdosage. Switzerland makes use of iodised salt only as a preventive, but sweets containing Iodostarin—an organic compound of iodine—are used both for prophylactic and curative purposes. One sweet a week, containing 1 mg. of iodostarin, is given as a prophylactic to school-children and military recruits, and sweets containing 3 mg. of iodostarin are used curatively. The report recommends that iodised sweets should not be on sale except under medical direction. Swedish school-children at Hofors who show no signs of goitre undergo a short course of treatment with iodised sweets every spring and autumn, one sweet a day being given for ten days. This is equivalent to a dosage of 4 grammes of iodide of sodium a year. The only inconvenience noted is an occasional transitory cold in the head, and doctors report that goitre is much less frequent among the children of Hofors than formerly. In America iodised salt is only recommended for the prevention of simple goitre. Speaking generally, the idea of iodised sweets has been abandoned, but in New Jersey chocolate tablets containing 5 to 10 mg. of iodine are given to children once a week all the year round.

The closely related problem of insufficient iodine in the breeding of livestock is dealt with in an interesting brochure by Mr. Frank Corrie, B.Sc., issued by the Nitrate Corporation of Chile, Limited. In our own columns recently (May 4th, p. 1029) Dr. Donald Hunter has alluded to the danger in certain parts of the world of animals failing to secure enough iodine in their food. In the Yellowstone River valley numbers of young pigs, lambs, calves, and colts used to die as the result of thyroid disease, and this calamity was averted when the shortage of iodine in the soil was made up for by giving sodium or potassium iodide to pregnant animals. Later the same problem arose in the Pemberton valley of British Columbia, where white settlers noticed as they ascended the valley that the incidence of goitre and fœtal athyrosis increased in their animals. Poultry appeared to thrive, but their eggs though producing embryos failed to hatch out. All goitres disappeared and no further trouble in rearing stock or fowls occurred after iodine was added to their ration. For two dollars a year sufficient iodine could be procured to keep 100 cattle, 12 horses, 30 pigs, 200 chickens and all their progeny free from goitre. Mr. Corrie summarises the experience of practical stock-breeders, with many of whom he is in correspondence. There is no doubt, he says, that even in many districts of this country the iodine content of the soil is inadequate to provide growing crops with a sufficiency of iodine to meet the requirements of stock. The artificial foods now so commonly used contain, he suggests, too little iodine to meet the needs of highly productive animals. Guano or Chilean nitrate of soda may help, but the judicious use of iodine in feeding stock is the best and cheapest form of insurance policy for the breeder. Mr. Corrie recommends a stock solution made by dissolving three-quarters of an ounce of potassium iodide in seven pints of water. Of this solution the daily ration for a horse is three teaspoonfuls, for a pig two, for a goat one, for a dog a quarter, for a rabbit one-twentieth; and much evidence is set out in the pamphlet, with abundant illustration, to show that these doses are effective.

BUSTS OF KOCH AND RÖNTGEN

THE Deutches Museum in Munich celebrated[1] last month the tenth anniversary of its foundation, and opportunity has been taken to place busts of Robert Koch and Konrad Röntgen in the chamber of honour. The bust of Koch which is by Prof. Georg Müller bears the inscription: "The discoverer of the tubercle bacillus and of other disease producers. In strict logical sequence he showed the ways to effective attack on the diseases that plague mankind." The dedication was made by Ministerial Director, Dr. Gütt. The twenty-fifth anniversary of Koch's death on May 27th has given another German medical weekly[2] occasion for an assessment of his work by the director of the Robert Koch Institute in Berlin. It was Koch, says Dr. Gundel, whose revolutionary genius let in the light to the causes and method of spread of infectious disease. The bust of Röntgen by Prof. Hermann Hahn was presented to the Munich Museum by Prof. Harms in the name of the University of Würzburg; the inscription runs: "The rays which bear his name show the physician the interior of the living body; they show the engineer the interior of his working materials; they have given the scientist a knowledge of the inner structure of the atom." The German Chemical Society proposes to present to the Museum memorial busts of F. Wöhler and Adolph v. Baeyer.

THE Ingleby lectures of the University of Birmingham will be given by Dr. K. D. Wilkinson, professor of therapeutics in the University, on Thursdays, June 13th and 20th, at 4 P.M., in the medical lecture theatre, Edmund-street. The subject is acute rheumatism and its results, and members of the medical profession are invited.

IT is proposed that a two-day conference shall be held at the London School of Hygiene and Tropical Medicine each July, so that medical officers in industry on leave from the tropics may be able to meet their colleagues and discuss their problems. Medical officers practising on plantations, mines, railways, hydro-electric and construction schemes, and development companies generally, will be welcomed. This year the conference will be held on July 9th and 10th. Those who intend to be present should write to the organising secretary, Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, Keppel-street, W.C. 1.

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[1] Munch. med. Woch., May 9th, p. 770.
[2] Deut. med. Woch, May 24th, p. 822.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LV.—PROGNOSIS IN DIPHTHERIA

Diphtheria although a preventable disease still ranks in this country as one of the formidable acute specific infections of childhood. Owing to the greater opportunities for infection, the highest incidence of the disease occurs shortly after school age, but the maximum case mortality, which at all ages is some 5 per cent., falls upon those of pre-school age. The age of the patient is therefore an important factor in prognosis. Clinical diphtheria, as distinct from a carrier state, implies the formation of pseudo-membrane by virulent strains of the *C. diphtheriæ* and a varying degree of toxæmia. There is considerable evidence of the frequent association of the *gravis* (starch fermenting) and *intermediate* (barred) strains of the bacillus, described by Anderson, McLeod, and their co-workers, with diphtheria of severe clinical type; but these strains are not invariably causal of severe attacks nor are those due to the *mitis* strain consistently mild. Generally speaking, however, gravis and intermediate infections tend to produce severe clinical attacks with rapid advance of toxæmia. Since diphtheria antitoxin adsorbs circulating toxin, checks the further spread of membrane (upon the extent of which toxæmia depends), and influences its early separation, prognosis is largely dictated by the promptness with which an adequate dose is injected by a route which is also adequate in the particular circumstances. Antitoxin can only prevent *further* damage by toxin; it cannot undo damage already brought about. Therefore the success of antitoxin therapy must depend primarily upon early diagnosis. This in turn depends not only upon the clinical judgment of the practitioner but upon the stage at which he is permitted to exercise it. The prognosis may have become virtually hopeless before medical aid is sought. Nevertheless, be the patient seen early or late, the existence of membrane, however indefinite or merely "suspicious," in the one case, or however old and necrotic in the other, should imply, without exception and without delay, the administration of antitoxin. But whereas in early cases a moderate dose by the intramuscular route ensures a favourable prognosis, in later ones the only chance of converting "grave" into "less grave" may be the injection of a massive dose intravenously. Here further damage must be stemmed, not after a further delay of 8 to 12 hours, which the intramuscular route imposes before there is effective concentration in the tissues, but immediately. Adequate dosage is essential; but an adequate dose injected by an inadequate route in the critical case may improve prognosis but little if at all. Swabbing, if allowed to usurp the place of clinical judgment, is a definite factor in increasing the gravity of prognosis in diphtheria; a doctor who tries to finesse with a swab when the trump card of antitoxin should be played, only too often, loses the trick.

Nasal diphtheria debilitates the child by a sub-acute toxic process and he is a danger to others rather than in immediate danger himself. A small dose of antitoxin by the intramuscular route speedily clears up the condition, the prognosis of which is very favourable.

Laryngeal diphtheria is sometimes primary but more usually secondary to a post-nasal focus in the infant or a faucial focus in the older child. The younger the child the more likely is the laryngeal form to occur and to result in a degree of obstruction necessitating *in addition* to antitoxin some form of intervention and to terminate in broncho-pneumonia caused by the downward spread of the specific and concomitant organisms. In private practice intervention must almost necessarily be tracheotomy with all its immediate dangers and the enhanced risk of subsequent broncho-pneumonia. In hospital practice prognosis in laryngeal diphtheria has become more favourable as the result of the intravenous injection of antitoxin, wherever possible, and the substitution, in suitable cases, of direct laryngoscopy and mechanical suction for intubation or tracheotomy. Not all cases are suitable or respond satisfactorily to this procedure. Tracheotomy may have to be performed in the end, but it is not infrequently obviated. Even in the mildest case of laryngeal diphtheria which appears to be responding to antitoxin, rest, and steam, the immediate prognosis should be very guarded. The sudden separation of membrane may cause the most urgent obstruction when all seems to be going well. Occasionally, too, there is a return of inspiratory stridor about the tenth day as part of the syndrome of serum sickness. Further, it has to be borne in mind that the child is still at risk from the late results of toxæmia especially, of course, if there was an associated extralaryngeal focus.

Faucial Diphtheria.—Given timely specific and skilled nursing treatment, the patient suffering from faucial diphtheria more often than not makes an uninterrupted recovery. But a minority of patients who have come under treatment late may, depending upon the initial severity of the infection and the time which this has gone unchecked, (1) die in the phase of initial toxæmia from acute myocarditis; (2) reach the stage of "convalescence" only to succumb after a succession of non-lethal forms of post-diphtheritic paralyses either to diaphragmatic paralysis or, more commonly, to myocarditis associated or not with heart-block; or (3) run the gauntlet of all these complications and at length recover completely. The clinical severity of faucial diphtheria is to be assessed by the extent and apparent age of the membrane and the concomitant local and general signs of toxæmia. The local signs are extensive and old membrane, fœtor, hyperæmia, and œdema of the fauces, and cervical adenitis and periadenitis. The general signs are prostration, pallor, and apathy or, in extreme cases, restlessness and delirium. The pulse is rapid, of low tension, and possibly irregular; pyrexia is slight or absent. Albuminuria is the rule. In the milder grades of the disease antitoxin by the intramuscular route and complete rest for some weeks suffices, but in the toxic case the intravenous injection of anything from 50,000 to 150,000 units is essential. The toxæmia of diphtheria results in profound disturbance of carbohydrate metabolism. Blood-sugar tolerance curves are of diabetic type. The greater the lag shown by the curves the worse the prognosis. In the toxic case prognosis, immediate and remote, is definitely improved by the exhibition, in addition to antitoxin, of glucose at first intravenously, and then, for the next ten days at least by mouth. The occurrence of post-diphtheritic paralysis of any type and however slight in degree is to be regarded as a danger signal—an indication of the fixation of toxin, the extent and gravity of which will only be fully revealed in the succeeding days. Palatal paralysis is usually first noted, and whatever the stage of the illness, absolute rest in a recumbent position without pillow must at once be resumed.

The two events to be feared are cardiac failure and diaphragmatic paralysis. The clinical onset of either is sudden and the prognosis of both very grave.

In hospital practice early warning of impending *cardiac trouble* is sometimes obtainable from serial electrocardiograms, but the cardinal clinical symptoms are *vomiting, epicardial pain,* and a subnormal temperature. The signs are those of cardiac dilatation associated in many cases with heart-block of varying grades and enlargement of the liver. Prompt resort or return to intravenous glucose therapy is essential and sometimes results in recovery in an apparently hopeless case. Adrenaline or ephedrine may be of value, and a very small dose of morphia (1/32 to 1/16 of a grain) by affording the child rest and relief from the distressing anginal pain occasionally helps to turn the scale. The ordinary cardiac drugs are of no value in this condition.

Diaphragmatic paralysis, which is not uncommonly associated with pharyngeal paralysis and gravely damaged heart muscle, may be of short duration, and the maintenance of a continuous supply of oxygen for 48 hours may tide the child over; but the prognosis is grave in the extreme. Evidence has been obtained in the wards of this hospital that the Drinker respirator, combined, if pharyngeal paralysis coexists, with periodical pharyngeal suction by means of an electric pump, is capable of saving some patients who otherwise, *from the observed duration of the condition,* must inevitably have died.

To hurry the convalescence of the diphtheria patient may be to ensure lasting myocardial weakness.

Even in the mild types of the disease a month of recumbency, followed by very gradual postural progress for the next fortnight, should be regarded as the minimum. A few cases of permanent heart-block have been recorded, and the rare post-diphtheritic hemiplegia results as a rule in recovery with permanent loss of function but, generally speaking, the post-diphtheritic lesions if they do not kill the patient at the time, in the end heal completely.

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SPECIAL ARTICLES

EXAMINATION OF MILK PRODUCTS FOR TUBERCLE BACILLI AND BRUCELLA ABORTUS

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THE object of this investigation has been to inquire further into the incidence of tubercle bacilli and *Br. abortus* in dairy products, in view of the common occurrence of these two contaminants in raw bulk milk (Pullinger, 1934).

The following products have been examined.

1. *Cream.*—Fifty c.cm. samples were examined, each representing from 150 to 200 gallons of cream, prepared from milk produced in Cheshire, Wiltshire, or Somerset. The fat content of the cream tested was about 50 per cent. Cream from each supply was tested when raw and after flash pasteurisation at 180° F. (82·5° C.). The pasteurised samples represent the cream delivered for sale in London.

2. *Butter.*—Samples of factory, imported, and farmhouse butter were examined. Quarter-pound packets of salted and unsalted factory-made butter, prepared in Wiltshire, were picked at random from stock and were tested within 48 hours of manufacture. The samples were taken on different days. The cream used in the preparation of this butter had been flash pasteurised. In the case of imported butter sample plugs were taken from 1 cwt. consignments. Unfortunately, the country of origin of these samples is not known, nor could it be ascertained whether they were prepared from pasteurised cream. Farmhouse butter, prepared from raw cream at different farms, was received as 1 lb. samples and was examined within 48 hours of manufacture.

3. *Soft cheese.*—Packets of "Little Wilts" and "Bondon" cheese, as issued for sale, were examined, two packets being picked at random from stock each day. A few samples of each were examined immediately after manufacture. The majority were stored for two days, this being the minimum period allowed to elapse prior to sale. "Little Wilts" cheese is prepared from raw milk and "Bondon" from skimmed milk by a natural lactic fermentation process.

4. *Hard cheese.*—(*a*) Cheddar cheese, which is manufactured from raw or pasteurised milk, was examined when 7 days old. (*b*) Cheshire cheese, which is manufactured from raw milk, was examined when 7 days old; a second series was tested when 7, 21, and 49 days old; and a third series 3 months after manufacture, when ready for sale. (*c*) Stilton cheese, which is manufactured from raw milk, was tested when ready for sale, that is when more than 3 months old.

With the hard cheese, sampling was effected by taking two plugs from different portions of each cheese.

TECHNIQUE

The products were submitted to the biological test with guinea-pigs. Cream was inoculated through a wide-bore hypodermic needle, 1 c.cm. being injected intramuscularly into each thigh. Butter was melted at 40° C., and similar injections were made with syringes that had been warmed. Cheese was worked into a paste and then an emulsion, by grinding it in a sterile mortar with sterile distilled water. Saline proved unsuitable for the emulsification of cheese owing to the formation of a gummy precipitate. One c.cm. quantities of the emulsion were inoculated into each thigh through a wide-bore needle. Cream samples were each inoculated into a single guinea-pig; samples of the other products were each inoculated into 2 guinea-pigs. The technique of examining these animals was similar to that previously described.[1]

RESULTS

Results of the investigation are summarised in the Table.

1. *Cream.*—Out of 31 samples of raw cream, 16 contained tubercle bacilli and 11 *Br. abortus.* Of the samples which were contaminated, 8 contained both organisms, 8 tubercle bacilli alone, and 3 *Br. abortus* alone. Twelve samples were apparently free from both contaminants. Thirteen of the 31 samples came from

milk produced in Wiltshire or Somerset; of these, 2 contained tubercle bacilli and 2 *Br. abortus*. Out of 18 samples from Cheshire, 14 contained tubercle bacilli and 9 *Br. abortus*.

All 35 samples of pasteurised cream were free from these contaminants.

Out of 35 guinea-pigs inoculated with raw cream, 4 died from intercurrent infections, while none of the 35 inoculated with pasteurised cream died prematurely.

Examination of Milk Products for Tubercle Bacilli and Br. abortus

Product and class.	Remarks.	No. of samples.	Tubercle bacilli.		*Br. abortus.*		Both contaminants absent.
			+	–	+	–	
Cream.							
Raw		31	16	15	11	20	12
Pasteurised		35	0	35	0	35	35
Butter.							
Factory	Salted	10	0	10	0	10	10
,,	Unsalted	10	0	10	0	10	10
Farmhouse		10	0	10	0	10	10
Imported		9	0	9	0	9	9
Cheese.							
"Little Wilts"	Fresh	3	0	3	0	3	3
	2 days old	14	0	14	0	14	14
Bondon	Fresh	3	0	3	0	3	3
	2 days old	14	0	14	0	14	14
Cheddar	7 days old	3	0	3	0	3	3
Cheshire	,,	6	2	4	1	5	4
,,	7 days old	3	2	1	2	1	1
	21 ,, ,,	3	0	3	0	3	3
	49 ,, ,,	3	0	3	0	3	3
,,	3 months old	9	0	9	0	9	9
Stilton	,,	2	0	2	0	2	2

2. *Butter.*—Twenty samples of factory, 10 of farmhouse, and 9 of imported butter were examined. Of these 39 samples, none was contaminated. Out of 78 guinea-pigs inoculated with butter, 11 died prematurely.

3. *Soft cheese.*—Seventeen samples of "Little Wilts" cheese and an equal number of samples of Bondon cheese were examined. Three samples of "Little Wilts" were forwarded for examination immediately after preparation. None of these contained tubercle bacilli or *Br. abortus*, but two samples of "Little Wilts" contained saprophytic acid-fast organisms. A second series of 14 samples of each class was examined when the cheese was two days old and ready for sale. All these samples were free from the above contaminants. Out of 68 guinea-pigs, 17 died prematurely.

4. *Hard Cheese.*—(*a*) Neither tubercle bacilli nor *Br. abortus* were isolated from samples of 3 Cheddar cheeses examined 7 days after manufacture.

(*b*) Samples were taken from 6 Cheshire cheeses when they were 7 days old; of these, 1 contained tubercle bacilli and *Br. abortus*, 1 contained tubercle bacilli alone, and 4 were free from contamination. A second series of 3 cheeses was examined when they were 7, 21, and 49 days old. At 7 days, 2 cheeses contained both tubercle bacilli and *Br. abortus*. Neither of these contaminants, however, could be isolated after 21 or 49 days of storage. A third series of 9 cheeses was examined when more than 3 months old and ready for sale and of these none was contaminated.

(*c*) Two Stilton cheeses were examined at the time of sale, when more than 3 months old. Neither was contaminated.

Out of 55 guinea-pigs inoculated with suspensions of hard cheese, 11 died prematurely.

DISCUSSION

The results of the examination of raw cream coincided with the expectation formed from an examination of bulk milk from the two sources of supply. As previously reported,[1] 21 per cent. of herd bulk milk samples from Cheshire contained tubercle bacilli and 37 per cent. *Br. abortus*. In herd milks from Somerset the percentages were 2 and 19 respectively. Flash pasteurisation of cream in shallow layers at 180° F. (82·5° C.), if efficiently carried out, is shown to be destructive of pathogenic contaminants.

Since factory-made butter is prepared from pasteurised cream, the absence of contaminants was to be expected. As regards butter prepared from unpasteurised cream, only a limited number of samples could be examined. J. Smith (1934)[2] examined 51 samples of "locally prepared" butter and found tubercle bacilli in 5 instances. J. W. Edington (1934),[3] working with larger quantities of butter and using a somewhat elaborate technique, found that out of 40 samples of imported butter 1 contained tubercle bacilli. The imported butter examined by this worker was thought to have been prepared from pasteurised milk. The findings of Smith and of Edington considered in conjunction with the high incidence of pathogenic contaminants in raw cream, indicate that these organisms must be frequently present in butter made from unpasteurised cream. Efficient pasteurisation of cream is a safeguard against such contamination.

Although no pathogenic contaminants were found in soft cheese, the fact that saprophytic acid-fast organisms were isolated from very fresh cheese may suggest that tubercle bacilli also are able to survive the original manufacturing process. On the other hand, the fact that acid-fast organisms were not found in 28 samples of soft cheese which had been stored for 2 days suggests that autosterilisation occurs rapidly during the ripening period. A period of 2 days, however, would appear to be a very narrow margin of safety for the destruction of pathogens.

The fact that tubercle bacilli and *Br. abortus* were found in Cheshire cheese 7 days old, but not when 21 or more days old, indicates that, in the case of hard cheese also, autosterilisation takes place. Since such cheese must be allowed to mature for three months or more before it is sold, the margin of safety would appear to be adequate. The reason for autosterilisation of cheese is at present obscure. In the case of hard cheese it is known that the hydrogen-ion concentration changes during the course of ripening from pH 4·6 to 6·2, and it seems likely that the high hydrogen-ion concentration during the early stages of ripening may explain the destruction of tubercle bacilli.

No losses from intercurrent infection amongst guinea-pigs inoculated with pasteurised cream were experienced. This is similar to the very low mortality of 2·5 per cent. which followed the inoculation of 78 guinea-pigs with pasteurised milk.[1] The mortality following the inoculation of raw cream resembled that of 11·5 per cent. resulting from the inoculation of raw rail-tank milk. The inoculation of butter and cheese was followed by a high mortality of 15 to 25 per cent.

SUMMARY

1. The occurrence of tubercle bacilli and of *Br. abortus* in raw cream is noted.

2. Contaminants were not found in any of the samples of butter examined, but the majority of samples were prepared from pasteurised cream.

3. Tubercle bacilli and *Br. abortus* may be found in hard or soft cheese immediately after manufacture,

but auto-sterilisation occurs during the ripening period. In the case of soft cheese the ripening period is short, and the possible danger of tubercle bacilli surviving is correspondingly greater.

4. Efficient pasteurisation of milk or cream is an adequate precaution against the survival of tubercle bacilli and *Br. abortus*. Where the heating process does not interfere with subsequent manufacture of milk products such pasteurisation should be carried out.

5. The losses from intercurrent infections, amongst guinea-pigs inoculated with the milk products examined, are noted; and the mortalities are compared with those which follow the inoculation of milk.

I am indebted to the directors of United Dairies Limited for their interest and financial support, and to Mr. E. B. Anderson, M.Sc., for arranging for the supply of samples, and for providing information relating to products examined and details of manufacture.

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THE MIDDLESEX HOSPITAL

As briefly announced last week, the new buildings of the Middlesex Hospital were opened on Wednesday, May 29th, by H.R.H. the Duke of York, when His Royal Highness was able to congratulate the governors of the institution on having raised the whole capital cost required. The Duke, who was accompanied by the Duchess, was met outside the main entrance by the chairman of the hospital, Prince Arthur of Connaught, and the terrace in the courtyard served as a platform for the speakers and guests of honour.

Prince Arthur of Connaught, in welcoming His Royal Highness, detailed some of the more important steps which had marked the progress of the hospital. He spoke of Sir John Bland-Sutton's Institute as one of the most valuable gifts ever made to medicine, valuable in itself and in its inspiration to others. This Institute was followed by the Courtauld Institute of Biochemistry, while Mr. Courtauld had also provided the science of medicine, in association with the Middlesex Hospital, with another new conception, the Clinical Research Unit where the professors of pathology, biochemistry, and physiology were directly in charge, and also in association with members of the clinical staff of the hospital. Of the developments in X ray and radiotherapy work, Prince Arthur said that the medical staff of the Middlesex were recognising the two different aspects presented—the therapeutic and the diagnostic—and named the benefactors whose great generosity was enabling both branches to develop. The radiotherapy department, the gift of Mr. E. W. Meyerstein, would, he said, shortly come into being, when the previous visits of inspection by the staff and selected experts to other scientific centres would assure to the hospital a first-rate department. The X ray diagnostic department, the gift of Mr. W. H. Collins, and already in operation, contained a plant unrivalled in other institutions. Prominent features in the work of the hospital which Prince Arthur mentioned, in illustration of its wide development, were the establishment of a complete unit to follow fracture cases from start to finish; and the construction of a model nurses' home, to which home Dr. Essex Wynter had added the perfect finishing touch by the presentation of his beautiful house, Bartholomew Manor, Newbury, as a home for retired nurses.

The Duke of York, in declaring the buildings open, recalled in particular the long association of the Middlesex Hospital in attempts to relieve cancer and to elucidate its problems.

"As President of the British Empire Cancer Campaign," he said, "I congratulate the Middlesex Hospital in playing a very important and distinguished part in the fight against a dread disease. I am happy to see with us to-day the Earl of Athlone, who was formerly chairman of this hospital, and was the first chairman of the council of the Campaign. The importance of early treatment of cancer has been urged again and again by yourselves and by your kindred research centres. This new Middlesex Hospital, thanks to its most generous supporters, has been enabled to embody in its scheme of reconstruction provision for the most modern treatment of all branches of this noble work. Cancer is an evil which must and will be crushed, and I would like to see a Cancer Research Centre such as yours established in every university teaching hospital, not only in this country, but throughout the Empire."

His Royal Highness dwelt on the value of close coöperation in a teaching hospital between the medical school and the medical, surgical, and research work. He recognised the administration of the school compelled long and arduous work on the part of those supervising its welfare, and congratulated all those who had contributed to the prestige of the school.

Of Prince Arthur of Connaught's work he said:

"I am sure I am expressing the wish of everyone here to-day in congratulating you on your success of your appeal to those generous supporters of our voluntary hospital system. This response from so many kind-hearted men and women has enabled this beautiful sanctuary to be raised by skilful workmen for the relief of suffering humanity. I recognise the fact that during the greater part of that time you have had to contend with national depression and financial difficulties. I feel convinced that just as you have succeeded in raising the huge capital sum for these buildings, so you will find the money that will enable you to make the best use of them."

His Royal Highness declared the hospital open.

Mr. W. Sampson Handley, senior surgeon of the hospital and chairman of the medical committee, said that they believed that research was the key to progress, and that the hospital had come to be recognised as a place where the medicine and surgery of the future were fashioned. Certain of the basic principles of the treatment of cancer were first worked out in the Barnato Laboratories, and of late years two possible routes to the problem of the causation of cancer had been supplied by the Bland-Sutton Institute. The complete success of their rebuilding fund might be partly interpreted as a public endorsement of their board's research policy and an acknowledgment of its success. In their preoccupation with research the interest of the individual patient remained dominant, and it was a daily pleasure to observe how they were treated by *nurses and servants* of the hospital.

Mr. A. E. Webb-Johnson, chairman of the Plans Committee of the hospital, read a letter announcing a subscription of £50,000 towards the new X ray therapy department from Mr. Meyerstein, and also announced that Mr. W. H. Collins had promised to give a like sum for the endowment of his department of X ray diagnosis. He added that when the history of the hospital came to be written it must be remembered that Prince Arthur had accepted the chairmanship with the responsibility of raising the enormous sum of money [illegible] ch had been obtained.

The [illegible] with the National Anthem, when their Royal Highnesses made a tour of the new buildings.

GENERAL MEDICAL COUNCIL

SUMMER SESSION, MAY 28TH–31ST, 1935

Cases referred by the Dental Board

The Case of Walter William Holmes, registered as of 261, Albert-road, Jarrow, Co. Durham, "Dentist 1921."

The Dental Board had investigated and found proved charges alleging that Mr. Holmes had induced another registered dentist to sign a dental letter stating that he had examined and intended to treat a patient who had, in fact, been examined and treated by Mr. Holmes, who had been disqualified for such work by the Department of Health for Scotland. There had been no complainant, and respondent had not attended or been represented. The Board recommended that Mr. Holmes's name be erased from the Dentists Register.

Mr. Harper, solicitor to the Dental Board, read a letter from respondent, who was not present, and testimonials. After deliberation in camera the President announced that the Registrar had been directed to erase Mr. Holmes's name from the Dentists Register.

The Case of Robert Marley, registered as of 22, St. Luke's-road, Pontnewynydd, Mon., "Dentist 1921."

The Dental Board had investigated a charge of allowing an unregistered person to practise in his name. There had been no complainant; respondent had attended without legal representatives. The Board recommended the erasure of Mr. Marley's name from the Register.

Mr. Marley did not attend and was not represented. A letter from him was read by Mr. F. P. Winterbotham, Mr. Harper's partner. After deliberation in camera the President announced that the name would be erased from the Dentists Register.

Penal Cases Adjourned from Previous Sessions

Adjourned from June 1st, 1934, the Case of George Francis Donaldson Perrott, registered as of 25, Bromefield, Stanmore, Middlesex, M.R.C.S. Eng. 1928, L.R.C.P. Lond. 1928, who had been summoned to appear before the Council on the following charge:—

> "That you were convicted of the following misdemeanours, viz.: (1) On April 13th, 1933, at the Staple Hill, Bristol, Police-court, of being in charge of a motor-car when under the influence of drink to such an extent as to be incapable of having proper control, and were fined £50 and £2 6*s.* costs and your licence suspended for five years. (2) On Nov. 17th, 1933, at the Marylebone Police-court, of being drunk and disorderly, and were fined 10*s.* 6*d.* or seven days' imprisonment."

That had been the third time Mr. Perrott had appeared, and he had been put on two years' probation, requiring testimonials at the end of one year.

Mr. Perrott did not attend the present session, and was not represented. Mr. Harper, the Council's solicitor, said that no further complaint had been received, and satisfactory testimonials had been sent. The President thought the Council might be satisfied with this intermediate report and note its reception.

Adjourned from Nov. 29th, 1933, and Nov. 28th, 1934, the Case of James Scott Webster, registered as of 31, Bank-road, Bootle, Liverpool, M.B., Ch.B. 1928, U.Edin., who had been summoned to appear before the Council on two convictions for offences against the Dangerous Drugs Act.

The Council had found the charges proved and had postponed judgment until November, 1934. Mr. Webster had been too ill to attend then, and the case had therefore been again postponed. Mr. Webster now attended, and the facts were laid before the Council by Mr. Winterbotham, who read five testimonials. After putting a number of questions to Mr. Webster, and after deliberation in camera, the President announced that the Council had not seen fit to direct the erasure of Mr. Webster's name.

Adjourned from Nov. 28th, 1933, May 29th, 1934, and Nov. 28th, 1934, the Case of Victor Cecil Tughan, registered as of 4, Stanton-court, Greenhill, Weymouth, M.R.C.S. Eng. 1925, L.R.C.P. Lond. 1925, who had appeared before the Council after convictions for being under the influence of drink while in charge of a car.

At the conclusion of the hearing on May 29th, 1934, the President had announced the decision of the Council as follows:—

> "Mr. Tughan: I have to announce that the convictions alleged against you in the notice of inquiry have been proved to the satisfaction of the Council. These convictions indicate habits which are discreditable, as you yourself admit, to the profession. In order to give you an opportunity of reconsidering your habits and your conduct, the Council have postponed judgment on these convictions until November next. Before that date you will be required to send to the Registrar of the Council, for their use, the names of certain professional and other persons of standing in your neighbourhood who may be willing on application to testify as to their knowledge of your habits and conduct in the interval."

At the conclusion of the hearing on Nov. 28th, 1934, the President had announced the decision of the Council as follows:—

> "Mr. Tughan: The Council have decided to postpone further consideration of this case until the May Session, 1935. They wish me to point out to you that you have not, apparently, fully appreciated the importance of furnishing testimony to your conduct from persons who are fully qualified to give it. For instance, you say you have been acting as locum tenens to a number of practitioners. Testimonials from practitioners who were in that close professional relationship to you, among others, would have been useful, and you will no doubt bear that in mind six months hence."

Mr. Tughan attended. Mr. Harper explained that Mr. Tughan had for six months been resident whole-time medical officer at a private home for paying mental patients, and had submitted testimonials from colleagues on the staff. After deliberation in camera the President announced that the Council had not seen fit to direct the erasure of the name of Victor Cecil Tughan.

Adjourned from June 1st, 1934, the Case of William Samuel Dixon, registered as of The Surgery, Fifth-street, Horden, Co. Durham, M.B., B.Ch. 1923, U.Dub., who had been summoned to appear before the Council on charges of canvassing which the Council had found proved. Judgment, however, had been postponed. The complainants had been The London and Counties Medical Protection Society, on behalf of three doctors.

Mr. Dixon attended, accompanied by Mr. O. Hempson, solicitor, on behalf of the Medical Defence Union.

Mr. Harper, for the Council, explained that the complainants did not appear now, and that two of the three doctors had no further complaint to make. Dr. A. McL. Wilson, however, had sent a letter from his solicitors proffering further charges against Mr. Dixon —not of canvassing, but of violation of medical etiquette. This letter had been received three days before, quite out of time by the Standing Orders. Mr. Harper read this letter, and a later one from Dr. Wilson himself. Mr. Hempson raised no objection and said he had, since hearing of the letter the day before, succeeded in bringing evidence on both the complaints, although they were, he said, utterly trivial and utterly malicious. The Council decided to proceed, and Dr. Wilson entered the witness-box and gave details of the complaints, stating that Mr. Dixon had enticed away two of his patients. Mr. Hempson cross-examined, and the legal assessor asked a number of questions as to Dr. Wilson's object in bringing these fresh complaints.

Mr. Hempson called Mr. Dixon, who gave his own account of the circumstances; one case had been a serious emergency, and he had given first aid only; the other patient had absolutely refused to see Dr. Wilson. He had communicated with Dr. Wilson in both cases. The mother of the first patient and the husband of the second were called and confirmed Mr. Dixon's evidence. Mr. Hempson briefly addressed the Council, urging that the complaints had arisen out of vindictiveness, and that the demeanour of complainant and witnesses spoke for themselves. He put in testimonials to Mr. Dixon's conduct since the Council's first inquiry.

The Council did not see fit to erase Mr. Dixon's name.

New Penal Cases

CONVICTIONS FOR DRUNKENNESS

The Case of Alexander Beck Cluckie, registered as of 25, Brock-street, Bath, M.B., Ch.B. 1908, U.Glasg., who had been summoned to appear before the Council on the following charge:—

> "That you were convicted at the Bath City Police-court of the following misdemeanours, viz.: (1) On June 26th, 1922, of being drunk while in charge of a motor-car, and were fined 40*s.* and £10 10*s.* costs (date of offence, June 3rd, 1922); (2) On Nov. 14th, 1934, of driving a motor-car without a driving licence, and were fined 5*s.* (date of offence, Nov. 3rd, 1934); and (3) On Jan. 15th, 1935, (*a*) of being under the influence of drink to such an extent as to be incapable of having proper control of a motor vehicle of which you were in charge, and were fined £20 and £2 2*s.* special costs and disqualified for holding a licence for five years (date of offence, Jan. 7th, 1935), (*b*) of driving a motor-car while under the influence of drink and were fined £25 and £3 3*s.* special costs and disqualified for holding a licence for one year (date of offence, Jan. 14th, 1935)."

Dr. Cluckie appeared, but was not accompanied by counsel. Mr. Winterbotham laid the facts before the Council, and read a letter from Dr. Cluckie's solicitors setting forth extenuating circumstances. Testimonials from professional colleagues were also read, and it was stated that Dr. Cluckie had become a total abstainer.

Dr. Cluckie said he had been suffering from insomnia and low blood pressure before the convictions; that he had never taken alcohol during consulting hours; that he had since been under treatment and was now in normal health. He was determined never to take alcohol again.

After deliberation in camera the President announced that the Council had decided to postpone judgment for a year, subject to the production of testimonials at that time.

The Case of William Graham, registered as of Bridge House, Manor-road, Tynemouth, M.B., B.S. 1923, U.Durh., who was summoned before the Council as a consequence of his conviction on Jan. 28th of this year before the Newcastle Police-court on a number of charges connected with the driving of a motor-car on Jan. 19th while under the influence of drink.

Mr. Graham appeared, accompanied by Mr. Hempson, on behalf of the Medical Defence Union. Mr. Harper, laying the facts before the Council, said that Mr. Graham had been before the Council a year ago with reference to a conviction of manslaughter at Newcastle, and had been discharged. On that occasion there had been no question of drink; he had fallen asleep while driving. Mr. Hempson, on the respondent's behalf, said that at the time of the manslaughter Mr. Graham had been seriously overworked, and in falling asleep at the wheel had not been guilty of any offence as a doctor. In the second instance he had been very unwell, suffering from chronic laryngitis and running a temperature. He had taken one whisky and soda as a restorative, and it had gone to his head. This was an isolated instance, and not the ordinary case of a man given to over-indulgence. Since that date Mr. Graham had abstained from alcohol altogether, and Mr. Hempson repeated an undertaking given by the respondent. Testimonials were read from a doctor, a vicar, and a solicitor.

After deliberation in camera the President announced that the Council had decided to postpone judgment for a year, subject to the production of testimonials on demand, and warned Mr. Graham to be very careful.

The Case of Samuel Patrick McGrath, registered as of 27, St. Julian's Farm-road, West Norwood, S.E. 27, M.B., B.Ch. 1924, N.U.Irel., who had been summoned to appear before the Council after conviction on two occasions for being under the influence of drink while in charge of a motor-car.

Mr. McGrath attended, accompanied by Mr. Hempson. Mr. Winterbotham set the facts before the Council. Mr. Hempson pointed out that, at the time of the first incident, Mr. McGrath had been through a very worrying time, having received bad news of some relatives when he was working very hard. In the second incident his car had run into an obstruction at the edge of the road, and the steering-wheel had broken and struck his face, breaking his nose. He had been bleeding severely and was only half-conscious when the police had arrived. His unsteadiness of speech was explained by the blow in the face; his unsteadiness of gait by the injury to his knees where they had struck the dashboard. His local colleagues had subscribed to pay his fine and costs, and had written to him expressing sympathy. Mr. Hempson read testimonials. The Council, after deliberation, found the facts proved, but postponed judgment until May, 1936, subject to the usual provisos.

The Case of Cecil John Rhodes Morrison, registered as of c/o National Bank of India, 26, Bishopsgate, E.C. 2, L.R.C.P. Edin., 1925; L.R.C.S. Edin., 1925; L.R.F.P.S. Glasg., 1925, who had been summoned to appear before the Council on the following charge:—

> "That you were convicted of the following misdemeanours, viz.: (1) At the Grays Petty Sessions, on April 13th, 1934, of being under the influence of drink and incapable of proper control of a motor-car of which you were in charge, and were fined £20 and 10*s.* 6*d.* expenses and your licence was suspended for twelve months; and (2) At the Lambeth Police-court on March 5th 1935, of being drunk and incapable, and were fined ten shillings."

Mr. Morrison appeared but was not accompanied by a legal adviser. Mr. Harper, opening the case to the Council, said that the respondent had been cautioned by the Council in 1927 after conviction for being under the influence of drink. The respondent read a letter addressed by himself to the Council. He said that he was now strictly teetotal, and asked the Council to give him another chance. The Council postponed judgment until May next, subject to the usual provisos, and the President reminded Mr. Morrison that control over events was largely in his own hands.

The Case of James Francis Patrick Devlin, registered as of Old Chapel House, Richmond-hill, Leeds, M.B., B.Ch. 1916, N.U. Irel., who has been summoned to appear before the Council on the following charge :—

> "That you were on Jan. 16th, 1935, at the Huddersfield County Borough Police-court, convicted of the following misdemeanour, namely, of being under the influence of drink to such an extent as to be incapable of having proper control of a motor-car of which you were in charge, and were fined £20 and £3 9*s*. costs or three months' imprisonment in default, and your licence was suspended and you were disqualified for holding a licence for twelve months."

Mr. Devlin attended, accompanied by Mr. O. Hempson, solicitor. Mr. Harper, for the Council, stated that Mr. Devlin had been before the Council in 1932 having been convicted for being drunk in the public highway, for which he had been fined 5*s*., and for drunkenness in charge of a motor-car. The President had on that occasion directed some severe remarks to respondent. Mr. Devlin's defence to the present charge at the police-court had been that he had been overworked in a severe outbreak of diphtheria, and had snatched a short holiday on Boxing Day ; he had met some Irish friends at a football match, and had had several drinks with them after missing his lunch.

Mr. Hempson, on behalf of the respondent, pointed out that he was a careful and abstemious man except on isolated occasions, and said that he undertook to abstain from alcohol in any form for the future.

After deliberation in camera, the President said that the Council would give Mr. Devlin one more opportunity of overcoming the tendencies which had caused him to be summoned before them, and would postpone their judgment for twelve months, subject to the usual provisos.

TWO MISSING MICROSCOPES

The Case of Oladipo Lahanmi, registered as of 2, Levenshulme-road, Gorton, Manchester, L.M.S.S.A. Lond., 1932, who had been summoned to appear before the Council on the following charge :—

> "That you were on Oct. 12th, 1934, convicted at the Liverpool City Police-court (*a*) Of feloniously stealing a 'Baker' microscope of the value of £10, the property of the Incorporated Liverpool School of Tropical Medicine, and were fined £5 or one month's imprisonment in default ; (*b*) Of feloniously stealing a 'Leitz' microscope of the value of £15, the property of the Incorporated Liverpool School of Tropical Medicine, and were fined £5 or one month's imprisonment in default, to run concurrently with the previous sentence."

The respondent attended but was not represented. Mr. Winterbotham, reading from the respondent's written statement to the Council, said that Mr. Lahanmi had borrowed first one microscope and then the other from the school just before he sat for his examination, to help him with his work. He had then found it impossible to return them without attracting the notice of the authorities. A friend whom he had asked to help him had finally informed the authorities of the irregularity. Mr. Lahanmi produced a number of warm testimonials to his character. The President, announcing the decision of the Council, said that the convictions indicated a weakness which was a very bad start in a professional life, but that the Council had taken into consideration the respondent's youth and the other circumstances, and had postponed judgment for twelve months, subject to the usual provisos.

FALSE PRETENCES

The Case of William Forbes-Leslie, registered as of Birkwood, Banchory, Kincardineshire, M.B., C.M. 1891, U.Aberd., who had been summoned to appear before the Council on the following charge :—

> "That you were convicted at the Central Criminal Court at its sessions commencing on Jan. 15th, 1935, of conspiring with other persons to obtain sums of money from Herbert Stewart Saunders and others by false pretences, and were sentenced to two years' imprisonment."

Respondent was not present, nor was he represented. Mr. Harper outlined the case and read letters from respondent asking for adjournment. Mr. Harper observed that the Common Serjeant, in sentencing respondent, had said he was the master mind in the conspiracy and a dangerous criminal.

After deliberation in camera the President announced that the Registrar had been directed to erase from the Register the name of William Forbes-Leslie.

A CONVICTION FOR MANSLAUGHTER

The Case of Samuel Ramsay Sibbald, registered as of Mariners'-parade, Canning-place, Liverpool, M.B., Ch.B. 1900, M.D. 1905, U.Edin., who had been summoned to appear before the Council on the following charge :—

> "That you were at the Liverpool Assizes, at its sessions commencing on Jan. 28th, 1935, convicted of manslaughter, and sentenced to five years' penal servitude."

Mr. Sibbald was not present or represented. Mr. Winterbotham put in the certificate of conviction and said the charge had originally been one of murder arising out of an illegal operation. The judge had said that he did not think the jury could have come to any other conclusion, and that he could conceive no worse case of the kind.

The Council directed the erasure of the respondent's name.

FALSE CERTIFICATION

The Case of Paul Verlannes, registered as of Stratford-house, Market-street, Ilkeston, Derbyshire. L.R.C.P. Edin. 1918, L.R.C.S. Edin. 1918, L.R.F.P.S. Glasg. 1918, who had been summoned to appear before the Council on the following charge :—

> "That, being a registered medical practitioner, (*a*) You as medical referee to the Royal London Mutual Insurance Society, Limited, signed a confidential medical report to the said Society dated Sept. 13th, 1932, certifying that you had personally examined one Leonard Charles Lidster, and recommended the directors to accept him as a first-class life, whereas you had never seen or examined the said Leonard Charles Lidster ; (*b*) You as medical referee to the Royal London Mutual Insurance Society, Limited, signed a confidential medical report to the said Society dated Jan. 12th, 1933, certifying that you had personally examined one Horace Steel, and recommended the directors to accept him as a first-class life, whereas you had never seen or examined the said Horace Steel ; (*c*) You as medical referee to the Royal London Mutual Insurance Society, Limited, signed a confidential medical report to the said Society dated July 12th, 1932, certifying that you had personally examined one John H. Atkin, and recommended the directors to accept him as a first-class life, whereas you had never seen or examined the said John H. Atkin ; (*d*) You as medical referee to the Royal London Mutual Insurance Society, Limited, signed a confidential medical report to the Society dated Sept. 13th, 1932, certifying that you had personally examined one Walter Davy Holmes and recommended the directors to accept him as a first-class life, whereas you had never seen or examined the said Walter Davy Holmes. And that in relation to the facts so

The President, in announcing the decision of the Council, said that the facts had been found proved and that they brought Dr. Crofton within the terms of the Warning Notice. The Council took a serious view of the offence, but postponed their judgment until May, 1937, subject to the usual provisos. He added that any method of treatment was open to any registered medical practitioner to use, but enthusiasm was no excuse for advertising.

The British Pharmacopœia

The PHARMACOPŒIA COMMITTEE reported that Sir Henry Dale had been appointed chairman for the ensuing year. The number of copies of B.P. 1932 sold to date has been 37, 631. Various subcommittees of the Pharmacopœia Commission are working on the Addendum, and conducting, in the laboratory over the G.M.C. offices, investigations for the descriptions of tests and assays and for the fixing of standards. A committee of experts has been formed to deal with vitamins and their preparations. The sections of the Pharmacopœia in which references to vitamins are made have been revised, and new monographs on products containing vitamins A, B_1, C, and D have been prepared, together with appendices describing the appropriate methods of assay. The subcommittee on serological and bacteriological products have completed their work, and have prepared descriptions of gas-gangrene antitoxin (œdematiens), gas-gangrene antitoxin (vibrion septique), staphylococcus antitoxin, antipneumococcus serum (Type I) and antipneumococcus serum (Type II), together with methods for their assay. For the vitamins and for the antitoxins and sera the international units and standard preparations have been adopted, and the requirements and tests have been brought into line with the decisions of the Permanent Commission on Biological Standardisation of the Health Organisation of the League of Nations. With the coöperation of the Rockefeller Foundation it has been possible to include tryparsamide in the Addendum. Recent discoveries on the active constituents of ergot have made it advisable for the Commission to review this drug. In 1930 the Commission received a request from the director of the Imperial Institute that the seeds of strophanthus emini, a product of Tanganyika Territory, might be considered for inclusion in the Pharmacopœia. Information regarding the chemistry, pharmacognosy, pharmacology, and clinical effects of the seeds has been collected and published.

Sir Henry Dale said that the Addendum was expected to be ready for publication next year.

VITAMINS IN THE PHARMACOPŒIA

Dr. H. G. Dain said that, having been concerned with the provision of drugs for insured persons, he had found considerable difficulty in drawing the line between foods and drugs. Since the products which contained vitamins should, in the ordinary way, be foods, the increase in the number of articles which appeared in the Pharmacopœia because of their vitamin content would make the distinction between foods and drugs more difficult. There was, of course, no reason why these substances should not be in the Pharmacopœia, but there was a question of policy—whether it was not a good thing to enable both the profession and the public to realise that vitamins should not be regarded as drugs. Though they might be necessary for the cure of certain conditions, they were necessary as foods. Some day the Government, under the advice of its then chief medical officer, would take steps to see that common articles of food should contain the vitamins that should properly belong to them if the health of the public were to be maintained. He asked Sir Henry Dale whether the food value of such constituents as were likely to be put into the Pharmacopœia were receiving the attention of the committee from the aspect of their food value.

Sir Henry Dale replied that Dr. Dain need have no apprehension. Everybody realised that a good deal of vitamin work and vitamin research lay on the borderline between therapeutics and nutrition. The changes now contemplated should make it clear that the aim of the Pharmacopœia was not to establish standards for substances which would properly be regarded as normal articles of diet and not as medicinal remedies. The present tendency, in fact, was in the other direction. Vitamins C and D, for which new monographs were to be produced, had both, between the issue of the 1932 Pharmacopœia and the preparation of the Addendum, been isolated in chemically pure form. Apart from the need for them in a normal diet, at the present stage of social development numerous cases would come under treatment by medical practitioners requiring the administration of vitamins in the most concentrated and immediately active form that could be obtained. The duty of the Pharmacopœia was to see that any potent remedy of this kind which the profession required should, apart from any question of general policy, be properly standardised, and this was the aim of the monographs in the Addendum.

Other Committee Business

The Council accepted the recommendation by the EDUCATION COMMITTEE that this committee should reconsider the regulations in regard to the registration of medical and dental students with a view to the removal of discrepancies in practice, especially those due to the revision of the curriculum.

The EXAMINATION COMMITTEE stated that the vacancies occurring in the medical services of the Crown continued to be filled by selection and that no competitive examinations had been held during 1934. It reported on the visitation of examinations held by various licensing bodies, and appended to its report some interesting tables showing the results of examinations during last year, with the numbers of students who had passed and failed.

MEDICINE AND THE LAW

Claim against Hospital and Surgeon

IN an action, heard before Mr. Justice Swift and a special jury last week, Mr. J. W. James sued the chairman and 29 members of the committee of the Royal Victoria Hospital, Folkestone, for damages for a surgical drainage-tube left in his body after an operation. He also sued Mr. W. W. Linington, the surgeon who had operated upon him. Mr. James had consulted Mr. Linington in March, 1928, and was sent to the hospital next day, where he was found to be suffering from pneumonia and pleurisy. On April 3rd Mr. Linington removed part of his rib and a drainage-tube was inserted. On May 17th the patient left the hospital, but continued to attend daily for the changing and sterilising of the tube till August, 1928, when he was discharged. Under medical advice he went abroad to Florida, where he enjoyed good health. Returning to England in May, 1929, he afterwards felt ill and eventually went to the Brompton Hospital, where he underwent an operation on March 8th, 1933. In the old wound was found a half-perished rubber drainage-tube, 4½ inches long. This was extracted and the patient's health has been good ever since. Mr. James said that nobody at the Brompton Hospital told him what had been found, but he discovered the information by reading his case sheet, which had been inadvertently left on his bed. In support of his claim, Mr. James said he remembered an occasion after the first operation, when a nurse appeared to remove from his wound a shorter piece of tube than had been inserted. It was apparently suggested that the drainage-tube was 6 inches long, and that on this occasion a piece 1½ inches long was removed, leaving 4½ inches still in the body. Mr. James was asked why he did not make any comment; he replied that he would have got no answer from the nurse, because she was acting in the ordinary routine of the hospital. On the other side there was evidence that it was almost impossible to break surgical tubing, that it would take years to perish, and that there was nothing in the wound on which the tube could catch.

At the close of the plaintiff's case it was submitted that the committee of the Folkestone Hospital had no case to answer. Although Mr. James had paid £15, it was a voluntary donation, and there was no contract between him and the hospital. His action against the hospital was brought upon an allegation of negligence. The managers and trustees of the hospital contended that their only duty was to use due care and skill in choosing the medical staff, and to see that patients were treated by experienced doctors and nurses; the relationship of master and servant did not exist between the governors of a public hospital and the surgeons who gave their services to the hospital; during an operation the nurses were not the servants of the governors because, for the time being, they took their orders from the operating surgeon only. The judge accepted these arguments and dismissed the action as against the committee of the hospital.

There remained the claim against the operating surgeon, whose defence was conducted by the Medical Defence Union. There was only one occasion when he had put in a tube (in April, 1928); the nurses must have dressed the wound and inserted tubes dozens of times. Somebody had undoubtedly been negligent, but Mr. James had to prove beyond reasonable doubt that the cause of his injury was some negligent act by Mr. Linington. This he failed to do. The jury and the judge expressed sympathy for the plaintiff, but a verdict was given for the defendant surgeon with costs.

Introductions in Medical Partnership

In articles of medical partnership there is usually a covenant that a retiring partner shall not attempt to practise within a certain radius of the partnership premises for a named period of years without the consent of the other party. A recent case in the Chancery Court in Manchester arose out of the soliciting of former patients of the partnership by the retiring partner. Dr. A paid Dr. B £1400 for two-fifths of his practice in 1929. He bought the other three-fifths for £1556 in 1934, in which year Dr. B retired. Their articles of partnership contained the usual covenant preventing Dr. B from attending former patients within a five-mile radius. It was nevertheless agreed that, notwithstanding the covenant, Dr. B might attend not more than 12 former patients within the radius if they specially requested his personal treatment and said they were not prepared to be attended by Dr. A or his partner. Such attendances by Dr. B were to be on behalf of Dr. A's practice, and Dr. A was to receive the fees, subject to a deduction of one-third in favour of Dr. B. Some weeks before Dr. B actually retired he sent out a circular stating that, after the date of his retirement, he would be at liberty to attend any of his former patients who did not desire the services of Dr. A or his partner. Dr. A thereupon asked the court for an injunction and damages. Dr. B's conduct was a breach of the agreement, and it infringed the general law of partnership. A retiring partner who sells his interest in a medical practice is in the position of a business man who sells the goodwill of his business. The law forbids a man who sells the goodwill of his business to solicit the old customers afterwards; the seller must not "derogate from his own grant" and injure the goodwill he has sold. In the case at Manchester the court held that Dr. B had broken this principle by his circulars. An injunction was granted against Dr. B with an inquiry as to damages. In medical partnership disputes there is often a complaint that the newcomer has not been properly introduced to the patients of the partnership. This point also was raised by Dr. A in the Manchester case. The judge said it was an ordinary custom that the purchaser of a share in a medical practice should be taken round and introduced to patients. Dr. B had undertaken to introduce Dr. A and had failed to do so. The court directed an inquiry to ascertain what damages, if any, had arisen from this breach of agreement. Dr. B was ordered to pay the costs of the action, the costs of the inquiries being reserved.

The Name of a Hospital

A special meeting of the court of governors of the Anti-Vivisection Hospital at Battersea passed last week, by a majority of 42 votes to 3, three resolutions for deleting all references to antivivisection in the memorandum of association of the hospital, and for changing the official name to the Battersea General Hospital, the title by which it has already been unofficially known. Lord Ernest Hamilton, the chairman, told the meeting that, if the resolutions were not passed, the hospital might as well close its doors the next day. He attributed the heavy indebtedness of the hospital to the "ceaseless hostility" and "fanatical bigotry" of the administrators of King Edward's Hospital Fund for London, who had refused all help. He reported his negotiations with them, and announced that the changes would bring a prospect of financial assistance, though the administrators of the Fund had intimated that, even if the name of the hospital were changed, they could not guarantee support. The passing of the resolutions indeed does not conclude the matter, since the hospital governors are trustees of a fund to be used for antivivisection purposes and an application to the law courts will be necessary. Before the meeting Lord Ernest is reported to have informed an interviewer that the "antivivisection" part of the hospital's name was "a meaningless term pinned to it many years ago and a great handicap." This mild description is not easily reconciled with the provocative policy for which Battersea has stood in the past. If, however, the hospital can now surmount its financial and legal difficulties, there need be no obstacle to its fruitful coöperation with other hospitals in the service of the public.

Treasure Trove

Judicial humour has its own perils, and some playful remarks by Lord Hewart about treasure trove have drawn a correction from the official head of the British Museum. The Lord Chief Justice, who by his office is himself chief coroner of England, was invited to open the reconstructed coroner's court for the City of London in Golden-lane on May 28th. Having explained that coroners are not exclusively concerned with inquiries into death, he went on to allude to their other surviving functions. In an allusion to treasure trove, he remarked, "If one of you has recently found good gold buried in the municipal park of your own particular domicile, I advise you that in this place it is not wise to divulge the discovery." Sir George Hill wrote to the *Times* from the British Museum to say that it would be a pity if this not very serious remark were to confirm the public in the mistaken notion that, if anybody finds a treasure, it will be taken by the police and the finder will get nothing. "It is to be feared that this delusion is shared even by coroners. The truth is that the honest finder who reports his find to the police either receives from the Crown the complete market value of his find, without deduction, or has his find returned to him." Sir George's statement does not quite tally with the notice sent by the Home Office to chief constables in 1925 when the Treasury reconsidered the arrangements for disposal of articles of treasure trove. It was then stated that if coins or other objects were required for the national museums, the finders would be paid the full antiquarian value, less a deduction of 20 per cent. But, whether or no there is a deduction, it is certainly important that treasure trove should be reported to the proper authorities and not concealed. Treasure trove, as coroners are aware, must be something intentionally hidden and not something lost or abandoned. A year ago an inquest was held on a guinea dated 1745 found on land adjoining Newbury racecourse. The jury held that this was not treasure trove, but the mere discovery of lost property. The coroner, in handing the coin back to the police, said he thought the finder was entitled to it.

SCOTLAND

(FROM OUR OWN CORRESPONDENTS)

THE HOSPITAL AS A LINK IN THE CHAIN

If hospitals tend to get patients too late they also tend to discharge them too soon. This is an opinion freely expressed, which Dr. Brownlie, chief medical officer of the Department of Health for Scotland, has discussed in a suggestive paper communicated, in absentia, to the International Congress of Hospitals held at Rome last month. This paper was entitled The Hospital as a Link of a Systematic Public Health Chain, and includes an analysis of the case records of patients discharged "from the wards of one of the best of our voluntary hospitals," which showed that only 14 per cent. were classified by the hospital staff as "cured" as against 56 per cent. "relieved." Many of these patients had been ill for months or years prior to admission to hospital, and the condition of many of them a few months after discharge was "as bad as it ever was." Is this true generally of the medical cases discharged from the general hospitals of Great Britain? Dr. Brownlie in his paper implied that it is, and he makes some interesting constructive proposals. These proposals for a more effective service throw into relief the position of the hospital as a link in the chain, and not the last link; and he attempts precision by advocating several specific measures to prevent what he calls "the stultification of the work of the hospitals." He gives the auxiliary hospital and the convalescent home their due place; but he lays most emphasis on the development of the out-patient department as the vital centre of a hospital's activity rather than a mere filter for determining suitability for admission to its wards. This is a good conception—not new, of course, but given here a new emphasis. He regards the out-patient department as the natural locus for the diagnostic centre whose establishment has been urged by the British Medical Association and other bodies; it is the natural centre also of follow-up activities. Dr. Brownlie points out that "the scientific investigation of the hospital may have determined for the patient a new scheme of essential values suited to his particular requirements—an appropriate dietary, a definition of permissible physical activity or an insulin dosage . . . but unless steps are taken to ensure that the outside practitioner is thoroughly conversant with the hospital findings and willing to continue to give his patients intensive supervision along the prescribed lines, subsequent relapse is almost inevitable."

The position is met at some hospital centres by an organised system of communication between the hospital staffs and the practitioner and by the almoner activities of the hospital. These activities are now to be extended to all the London County Council hospitals "for the purpose not only of considering the question of contributions by patients and relatives towards the cost of treatment, but also to act as social officers to give advice to patients, and to see not only that they get well but keep well." The almoners would not claim, however, that they can take the place of the practitioner as the essential link between patient and hospital; they supplement the practitioner's work; and the development of the almoner service in no way diminishes the need for closer coöperation between practitioner and hospital. The case for the out-patient department as the centre of coöperation remains. Dr. Brownlie speaks as a health administrator; he speaks therefore of an organisation in which, theoretically, clinics, dispensaries, auxiliary institutions and outdoor medical services (not to mention housing, public assistance, and other social services) function along with the hospitals in an integrated health service. The problem, therefore, of using the municipal general hospital as "a link of a systematic public health chain" is comparatively easy to solve. But what of the voluntary general hospital? It is, in most areas, an isolated unit. Can it continue in isolation and at the same time meet fully the need not only for comprehensive aids to diagnosis but also for active after-care of patients? Dr. Brownlie does not explicitly raise this issue; but it is the immediately practical one, since the voluntary hospitals still are and will long remain, the main centres of hospital treatment in Great Britain. This conception of the hospital as a link in the chain of preventive and constructive medicine is likely to do more to speed up coördination of voluntary and municipal hospital services than the mere adjustments of numbers of beds and the like have hitherto achieved.

DUKE OF KENT IN GLASGOW

During the visit of the Duke and Duchess of Kent to Glasgow last week, His Royal Highness opened new buildings at the Victoria Infirmary, which included a home to accommodate 145 nurses, and a wing for fee-paying patients. The cost of the buildings has been £80,000, and the total number of beds in the infirmary is now 477. The Duke also laid the foundation-stone of the Royal Infirmary auxiliary hospital and convalescent home at Canniesburn. The new building is to consist of three blocks connected together. The convalescent block will have accommodation for 80 patients, the west block is to be for paying patients and will contain 44 beds, while the central block is to house the administrative department and the kitchen and dining-room for nurses.

EDINBURGH MUNICIPAL HOSPITALS

A further step in the development of the Edinburgh municipal hospitals is the recommendation of the public health committee to proceed with the reconstruction scheme at the Western General Hospital. This hospital was erected in 1868 as a poor-house, and instead of attempting to reconstruct the existing buildings, it is proposed to build a new surgical unit seven stories in height, with 26 beds on each floor. A medical unit is also to be built, which will contain 182 beds. In addition to these improvements there will be a new X ray department and a new nurses' home. The total cost of the proposed extensions will be £120,000.

POLICE MEDICAL OFFICERS

The Glasgow corporation have been discussing the proposed appointment of two full-time medical officers to be attached to the police force. The Secretary of State for Scotland, after consultation with the Lord Advocate, has given his opinion that the time has now come when the whole of the medical and casualty surgical work in connexion with the police force should be performed by whole-time medical men employed by the police authority. In his view it is of the utmost importance in the interests of the rapid detection and suppression of crime, that police officers and police doctors should work in alliance immediately a crime has been discovered. For this purpose the service of whole-time medical jurists, who would be available at any hour of the day or night, is essential.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

THE BASIC SCIENCE LAW

Sir Henry Brackenbury knows the medical problems in this country as well as he does those in his own. His distinction between the British and American systems of dealing with cultists as reported in your columns (THE LANCET, April 6th, p. 832) is good evidence of this. Those who have had experience of the American system of regulating the irregular practitioners will surely envy the Englishmen their single standard of qualification. The Basic Science Law, recently enacted in nine States, is the American method of recovering that single standard. The basic sciences as defined in the model Act are: anatomy, physiology, chemistry, bacteriology, and pathology. However, not all of the States that have adopted the law have retained this definition of basic sciences. Connecticut has hygiene and diagnosis in place of bacteriology and chemistry; Nebraska has added hygiene to the original list of five; Washington substituted hygiene for bacteriology; and Wisconsin dropped both chemistry and bacteriology and added diagnosis. The law limits membership of the examining board to members of the faculties of approved universities and colleges. This meets as far as it is possible to do so the inevitable accusation that the medical profession will exert prejudice in the examinations against members of the cults. The Act does not apply to dentists, pharmacists, nurses, optometrists, and chiropodists practising within the limits of their respective callings. B. J. Palmer, the father of chiropractic, has looked with envy on this list of exemptions. "You cannot defeat the ends of science," he has said. "The basic science bills are the buckshot which we deserve for trespassing. When chiropractors preach and practice and try to become physicians, then it is justifiable for the medical men to educate the chiropractor."

The ultimate success of the basic science laws depends upon education of the public to demand a minimum standard of preparation from all who are licensed to take into their hands the issues of life and death. It will obviously be years before the damage done to public welfare, through letting down the bars to quite uneducated healers with all kinds of fancy names, is repaired. Even now cultists are claiming and often obtaining the right to be employed under the provisions of federal emergency medical relief. But in the end the adoption of the Basic Science Law may recover for us something of the standard of medical practice which Britain enjoys.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE SPENDING OF SICKNESS INSURANCE FUNDS

INSURED workers in France have for some years contributed substantial sums to the organisations which correspond to the English friendly societies, and now the very size of these sums is a source of national embarrassment. There seems inevitably to be an element of demoralisation in the large fortune to which there are many claimants, and a mighty tussle is in prospect over the disposal of the funds in question. Monsieur Queuille, the minister of public health, has recently taken the initiative in drafting a law providing for the coördination of schemes for spending the money on buildings and other works devoted to public health. His draft is now being considered by two other State departments, those of labour and finance, and when a[illegible]ment has been reached among them, it will be [illegible]mitted as a Bill to the Chamber of Deputies. [illegible] is already a network throughout the coun[illegible] public health centres concerned with tuber[illegible] venereal disease, cancer, and maternity an[illegible] welfare, and one of the most important ste[illegible] to [illegible] taken in the near future is to bring thes[illegible] centr[illegible] into the general public health scheme with[illegible]out over[illegible]lapping or friction. As in all other countries [illegible] which compulsory health insurance has been introduced, the interested parties in France are [illegible] forming well-defined groups for the defence of their particular interests. First there are the insured workers and the societies and officials representing them. Then there are the general medical practitioners who have hitherto enjoyed much independence, and who now find one function after another being removed from their hands. There is also the young but rapidly growing generation of doctors who se[illegible]e in the beginning of a State medical service openings which are not without attraction. Lastly, there are the highly placed State servants who must coördinate the whole and hold the balance as fairly as possible between the other parties. There is talk of some 975 schemes in the ministry of public health for the spending of insurance funds which have recently been valued at more than 1300 million francs. It is going to be no easy task to convert this stupendous sum into hospitals, sanatoriums, preventoriums, laboratories, dispensaries, and playgrounds for children.

low incidence of diphtheria, which he attributes to the success of the immunisation campaign. Toxoid antitoxin floccules are being used so that reactions are avoided, and the preliminary Schick test has been abandoned because experience has shown that, in this agricultural area, 80 per cent. of the children are Schick-positive. This may be all the more reason for doing a late posterior Schick test, at least on a fairly large sample of the immunised, since it has been found that communities less exposed to natural, if latent, immunisation are rather more difficult to immunise artificially. Acceptances are satisfactory. Seven schools were dealt with during the year. In three of them over 90 per cent. of the parents consented, 80 per cent. in another, between 70 and 80 per cent. in two, and 54 per cent. in the remaining one. During the past two years 2000 persons have been immunised. In Holland immunisation appears to be regarded legally as a function of the sanitary authority, Dr. Booth acting for them at their expense. The legal position is a little obscure. Under Section 80 of the Education Act, 1921, a local education authority—i.e., a county council, except in the case of the larger urban areas—may do anything for the health and physical welfare of the school-children to which the Minister of Health consents. The position of maternity and child welfare authorities (which may be county councils or county district councils) is similar under Section 1 of the Maternity and Child Welfare Act, 1918, and the Minister has given a general consent to extensions of schemes such as immunisation at centres would involve. Apart from these provisions, which cover most of the population requiring this form of attention, it would appear that the county district councils (i.e., sanitary authorities) can only undertake immunisation in virtue of Section 133 of the Public Health Act, 1875, which requires an explicit sanction from the Minister of Health.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 25TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2142; diphtheria, 1018; enteric fever, 23; acute pneumonia (primary or influenzal), 945; puerperal fever, 46; puerperal pyrexia, 108; cerebro-spinal fever, 20; acute poliomyelitis, 3; encephalitis lethargica, 10; continued fever, 1 (Rhondda); dysentery, 22; ophthalmia neonatorum, 107. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 31st was 3061, which included: Scarlet fever, 913; diphtheria, 1209; measles, 31; whooping-cough, 389; puerperal fever, 27 mothers (plus 12 babies); encephalitis lethargica, 268; poliomyelitis, 3. At St. Margaret's Hospital there were 17 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 22 (1) from measles, 6 (0) from scarlet fever, 22 (1) from whooping-cough, 48 (9) from diphtheria, 49 (11) from diarrhœa and enteritis under two years, and 70 (8) from influenza. The figures in parentheses are those for London itself.

The only death from enteric fever outside London occurred at Edmonton. Five deaths from measles were reported from Birmingham, 4 from Liverpool, and 3 from Walsall. No great town reported more than 2 deaths from whooping-cough. Liverpool had 3 fatal cases of diphtheria, West Ham, Manchester, Preston, Sheffield, Birmingham, and Burton-on-Trent each 2. Of the deaths attributed to influenza 9 occurred at Manchester, 5 at Bradford, and 4 at Leeds.

The number of stillbirths notified during the week was 274 (corresponding to a rate of 38 per 1000 total births), including 43 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Rear-Admiral H. R. H. Denny, C.B., has been appointed Hon. Surgeon to the King, from May 8th, in the vacancy caused by the retirement of Surg. Rear-Admiral W. W. Keir, C.M.G.

Surg. Comdr. J. H. B. Crosbie to *Drake* for R.N.B.

Surg. Lt.-Comdr. C. Keating to *Victory* for R.N.B., and to *St. Angelo* for R.N. Hospl., Malta.

Surg. Lt.-Comdrs. G. Rorison to *Faulknor*, on commg., and J. M. Sloane to *Victory* for R.N.B.

Surg. Lts. (Short Service) S. K. Foster, J. W. Oliver, H. de B. Kempthorne, F. M. Duthie, and T. McCarthy, transferred to permanent list, with original seny.

Surg. Lt. F. M. Duthie to *Victory* for R.N.B.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. J. E. L. Morris and Proby. Surg. Lt. J. L. Dunlop to *Tiverton*.

Proby. Surg. Lt. (D.) J. W. W. James, L.D.S.U., to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Short Serv. Commissions.—G. S. Musgrove to be Lt. (on prob.), Lt. (on. prob.) G. C. Dansey-Browning is secd, under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931.

Temp. Commissions.—Maj. F. C. Doble relinquishes his commn., and retains the rank of Maj.

REGULAR ARMY RESERVE OF OFFICERS

The undermentioned having attained the age limit of liability to recall, cease to belong to the Res. of Off.:—Col. W. R. P. Goodwin, D.S.O. (late R.A.M.C.), Maj. G. H. Rees.

TERRITORIAL ARMY

Capt. G. T. Symons to be Maj.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. W. D. Sturrock, D.S.O., having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE

*The undermentioned are granted short service com*missions as Flying Officers on probation for three years on the active list, with effect from May 7th, 1935:—R. C. H. Tripp, P. A. Cooper, L. E. A. Dearberg, H. L. Willcox, and A. R. C. Young.

Flight Lt. P. D. Barling is promoted to the rank of Squadron Leader.

Wing Comdr. A. J. Brown, D.S.O., *is placed on* the retired list.

Dental Branch.—Flying Offr. R. H. Marthews, L.D.S., is promoted to the rank of Flight Lt.

Flying Offr. A. W. Smith to R.A.F. General Hospital, *Hinaidi, Iraq.*

INDIAN MEDICAL SERVICE

Lt.-Col. W. J. Simpson retires.

Capt. S. S. Ahluwalia resigns his temp. commn.

Indian Medical Department.—The undermentioned retire: Maj. (Sen. Asst. Surg.) F. W. Holmes and Maj. (Sen. Asst. Surg.) R. H. G. Thompson.

The list of earthquake casualties reported from Quetta includes the names of Lt.-Col. B. C. Ashton, I.M.S., and Major J. G. Bird, I.M.S., amongst the injured.

BRIGHTON AND HOVE DENTAL HOSPITAL.—Owing to continued lack of support the work at this hospital has had to be curtailed. The move to the present building in Buckingham-road, Brighton, from the inadequate accommodation in Queen's-road, has been fully justified; but the mortgage remains an anxiety and a burden. Until it is paid off it will be impossible to buy an X ray apparatus. It was stated at the annual meeting of the governors that the income from subscriptions last year was only £37. A special appeal is to be made in the autumn. The institution was established in 1887 and will observe its jubilee in two years' time.

CORRESPONDENCE

LONDON HOUSE

To the Editor of THE LANCET

SIR,—We are anxious to direct the attention of the medical profession to a letter, signed by General Smuts, Mr. Bruce, Sir Robert Borden, Sir James Parr, and Lord Lugard, and a leading article in the *Times* of May 27th.

In this letter an appeal is made to the public to support financially a scheme for the completion and endowment of London House, an institution which has already proved invaluable to a large number of post-graduate medical students from overseas and which is destined to play a very important part in the educational life of the Empire.

London House, situated in Mecklenburgh-square and opened in 1931, owes its origin largely to the enthusiasm and hard work of the late Mr. Frederick C. Goodenough, whose ambition it was to establish a home for students from all parts of the Empire with amenities and facilities for the completion of their education similar to those afforded by the colleges of our more ancient universities.

The Carnegie Corporation, already generous donors, have promised a further sum of £20,000, provided that £30,000 can be raised from other sources, and it is calculated that the total of at least £50,000 will be necessary for further building and endowment purposes.

This year is remarkable for efforts to make London a worthy centre of Imperial Medicine, and to bring members of our profession all over the world into closer relationship. The opening of the Postgraduate School at Hammersmith by Their Majesties the King and Queen is to be followed by a meeting of the British Medical Association in Melbourne, which means that several hundred practitioners will be traversing and visiting several of the Dominions. We are afforded, therefore, the opportunity for making the advantages and needs of London House well known all over the Empire and for stimulating the profession and its friends, overseas as well as at home, to unite in giving a great project all the support and encouragement it deserves.

Contributions may be sent to the Hon. Treasurer of London House, 54, Lombard-street, London, E.C. 3.

We are, Sir, yours faithfully,

DAWSON OF PENN,
HOLBURT WARING,
MOYNIHAN,
HORDER,
FREDERICK MENZIES,
W. LANGDON-BROWN,
E. FARQUHAR BUZZARD.

May 31st.

LEAGUE OF NATIONS REPORT ON THE TREATMENT OF SYPHILIS

To the Editor of THE LANCET

SIR,—Since the publication of the *Quarterly Bulletin* for March, 1935, of the Health Organisation of the League of Nations, which contains the report of an expert committee summarised in your issue of May 18th (p. 1170), I have repeatedly been asked why it is that among the 29 British clinics which submitted their records the name of no Manchester or Salford treatment centre appears. For Manchester I cannot speak; but so far as Salford is concerned the reason is that no invitation was issued to it.

This explanation seems to be necessary in view of the statement made in the report that "In each of these countries the dermatological and venereal disease clinics were appealed to for their support, and a large majority readily responded." It might be thought, on looking at the table of British clinics, that the Salford municipal clinic—one of the largest in the country—refused to take part in the investigation. I want to make it perfectly clear that not only was this clinic not asked to submit its records, but it did *not receive any official intimation* that such an inquiry was in progress.

The omission of the Salford municipal clinic is the more remarkable because it and one other are the only treatment centres in Great Britain where the alternating and continuous method of therapy is in operation. I am, Sir, yours faithfully,

Municipal Clinic, Salford, May 30th. E. T. BURKE.

STIMULANTS OF METABOLISM

To the Editor of THE LANCET

SIR,—We fear that Dr. Newcomb has misinterpreted our letter in THE LANCET of May 25th. Sir William Willcox conveyed the impression that given in recognised therapeutic doses nitrophenols cause damage to liver and kidney. We emphasised that in therapeutic doses it was impossible to obtain any evidence of damage to liver or kidney. Dr. Newcomb, however, was referring to a case in which there was a gross overdosage. We feel that it is only fair to stress the difference between his observations and our own results obtained from a study of persons and animals to whom normal doses of the substance were administered. We wish to make it clear that we were concerned solely with the alleged toxicity of these compounds and made no reference to the relative merits of various methods of treatment for obesity. The question of the state of mind of one of us (E. C. D.) on this point does not therefore arise.

We are, Sir, yours faithfully,

E. C. DODDS,
J. D. ROBERTSON.

Courtauld Institute of Biochemistry, Middlesex Hospital, June 3rd.

ADMINISTRATION OF CARBON TETRACHLORIDE FOR HOOKWORM

To the Editor of THE LANCET

SIR,—In your last issue Dr. A. S. Tuxford suggests that to give carbon tetrachloride shaken up in castor oil makes for safety. G. Giglioli felt that the same result was produced by shaking it up in water (Trans. Roy. Soc. Trop. Med. and Hyg., 1924, xviii., 111). Both opinions are formed on uncontrolled experiments of insufficient extent, and accordingly have no stable foundation. As to efficacy both series of observations were made by treating men in herd fashion, it being unknown whether, at the time of treatment, they were even infected; accordingly the efficacy of the treatment used by Dr. Tuxford is unknown. As to animal experiment, the only evidence in any way apposite which I have traced is by Maurice C. Hall (Jour. Agric. Research, 1921, xxi., 157), who recovered no hookworms after treating a dog with 0·3 c.cm. of carbon tetrachloride per kg. body-weight, followed immediately by castor oil; the sufficiently meagre evidence is against the anthelmintic value of the suggested method of administration, but this can never be determined by herd treatment. I am dealing more widely with the general subject in a paper which will be published shortly. I am, Sir, yours faithfully,

Ealing, May 31st. CLAYTON LANE.

TREATMENT OF SCABIES

To the Editor of THE LANCET

SIR,—Dr. Ingram's defence of the use of sulphur in scabies may have some weight in civilian practice, though even here, if more rapid methods prove practicable, the approved societies will consider that the presence of a mite in the skin does not create a sickness disability. Among private patients too there will be some for whom the time factor is very important. The problem however is much more serious in the Army, where one indication of military efficiency is the absence of preventable disease. It is to the Army we naturally look for any advance in disinfestation, as it can command the services of experts in the effects of gases and vapours. To discover the most suitable pesticide for the acarus does not appear a difficult task, at least in theory. The common spider ought, in default of the mite, to make a good corpus vile on which to test the lethal agent. As a dilute sulphur ointment kills (or is it only a repellent?) the parasite, we may conclude that a chemical rapidly fatal to the intruder but innocuous to the host can be found. The crux appears to be the eggs and female in the burrows. Local reduction of the air pressure by rupturing these, as in the treatment of books in a closed chamber, might solve this difficulty, should such arise. A more scientific outlook on scabies would develop if the word were dropped from the Nomenclature of Diseases and classified under such a term as dermatitis infestata. The use of ointments for prolonged periods in skin parasites has had a long day, and the time has come when experience gained in the treatment of infestations outside the human race should receive a fair trial.

I am, Sir, yours faithfully,

Knock, Belfast, June 3rd. R. M. FRASER.

THE INDIAN EARTHQUAKE

To the Editor of THE LANCET

SIR,—The earthquake in Baluchistan is a disaster of the first magnitude. It is inevitable that with a death-roll running into tens of thousands large numbers of children have been injured and orphaned and thrown into want and misery. On behalf of the Save the Children Fund, which during 16 years has disbursed over £2,500,000 for the rescue of children at home and abroad in times of distress and disaster, I am appealing for help for these children. Donations received by the hon. treasurer, Mr. H. D. Watson, C.I.E., C.B.E., at 40, Gordon-square, London, W.C.1, can be used for their immediate relief.

I am, Sir, yours faithfully,

NOEL-BUXTON.

June 4th, 1935. President, the Save the Children Fund.

DISTRESS AND HEALTH.—An annotation of *this* title in our issue of May 4th drew a letter of protest from Dr. John Marrack (vide THE LANCET, May 18th, p. 1189). His criticism was to the effect that in our note upon economic circumstances in relation to the health of the community in Sunderland and certain districts of Durham (H.M. Stationery Office. 1935. Cmd. 4886. Pp. 52. 9*d.*) we had not done justice to the White Paper. In a further communication Dr. Marrack says that the quotation of figures in his previous communication was not correct, but holds that as a correction of the figures would strengthen his arguments his criticism stands good. This is a position which must remain, as Government Departments are unable to enter into public discussions.

THE BIRTHDAY HONOURS

THE list of honours conferred by the King on his 70th birthday contains the following names of members of the medical and dental professions:—

Baronet

Sir Henry Jackson, M.B., M.P.
For services in connexion with transport.

Order of Merit

Sir F. Gowland Hopkins, F.R.C.P., P.R.S.
Professor of biochemistry in the University of Cambridge.

G.C.V.O.

Sir E. Cooper Perry, F.R.C.P.
Consulting physician to Guy's Hospital.

G.B.E.

Sir George Newman, K.C.B., F.R.C.P.
Lately chief medical officer, Ministry of Health and Board of Education.

K.C.B.

Lieut.-General James Andrew Hartigan, C.B., C.M.G., D.S.O., M.B.
Director-general of Army Medical Services.

K.C.V.O.

Lancelot Edward Barrington-Ward, F.R.C.S.
Surgeon to the Hospital for Sick Children, Great Ormond-street, and the Royal Northern Hospital.

A. James Walton, F.R.C.S.
Surgeon to H.M. Household; surgeon to the London Hospital.

K.B.E.

Air Vice-Marshal John McIntyre, C.B., M.C., M.B.
Late director of medical services, Royal Air Force.

D.B.E.

Mrs. Annie Jean Connor, M.D.
For work on maternal and child welfare in Australia.

Miss Constance Elizabeth D'Arcy, M.B.
For work on maternal and child welfare in Australia.

Knights Bachelor

Arthur John Hall, F.R.C.P.
Emeritus professor of medicine in the University of Sheffield.

Walter Burford Johnson, C.M.G., F.R.C.S.
Director of medical and sanitary services, Nigeria.

Patrick Playfair Laidlaw, F.R.C.P., F.R.S.
Pathologist on the staff of the Medical Research Council.

Harry Cuthbertson Moxham, D.D.S.
Federal president of the Dental Association, Commonwealth of Australia.

John Vigers Worthington, M.R.C.S., M.P.
Parliamentary private secretary to the Prime Minister.

C.B. (Military)

Major-General R. B. Ainsworth, D.S.O., O.B.E., M.R.C.S.
Commandant and director of studies, Royal Army Medical College.

Major-General C. W. F. Melville, F.R.C.S.E., I.M.S.
Deputy director of medical services, Eastern Command, India.

Major-General T. G. F. Paterson, D.S.O., M.B., I.M.S.
Deputy director of medical services, Northern Command, India.

Major-General J. W. West, C.M.G., C.B.E., M.Ch.
Professor of military surgery, Royal Army Medical College.

C.B. (Civil)

Lionel Danvers Bailey, M.C., M.R.C.S., K.H.P.
Colonel, Army Medical Services, T.A.; Superintendent of the physiotherapy department, St. George's Hospital.

Surgeon Rear-Admiral J. S. Dudding, O.B.E., M.R.C.S.
Formerly director of medical studies, Royal Naval Medical College.

C.M.G.

David Duff, M.D.
Director of medical services, Gold Coast.

C.I.E.

Lieut.-Colonel Bernard Higham, M.B., I.M.S.
Chemical analyst to the Government of Bombay.

Lieut.-Colonel Robert Knowles, M.R.C.S., I.M.S.
Professor of protozoology and secretary of the Calcutta School of Tropical Medicine; late editor of the *Indian Medical Gazette.*

C.V.O.

Charles Gordon Moore, M.B.
Physician in ordinary to Princess Beatrice.

C.B.E. (Military)

Colonel Wallace Benson, D.S.O., M.B.
Assistant director of medical services, London.

C.B.E. (Civil)

Miss Elizabeth Bolton, M.D.
Senior surgeon to the Elizabeth Garrett Anderson Hospital; dean of the London School of Medicine for Women.

The Hon. A. E. Colvin, M.C., M.B.
Chairman of the New South Wales Hospital Commission.

Cecil Evelyn Cook, M.D.
Chief Protector of aborigines, Northern Territory, Australia.

Hamilton William Dyke, M.B.
Principal medical officer, Bechuanaland.

George Marshall Findlay, O.B.E., M.D., Sc.D.
Member of scientific staff, Wellcome Research Institution. London.

Laurence Edward Keegan, M.D.
Superintendent, General Hospital, Newfoundland.

Robert Edward McKechnie, M.D.
Chancellor of the University of British Columbia.

Charles Johnston Smith, O.B.E., F.R.C.S.E.
Senior surgeon, General Hospital, Singapore.

Michael Herbert Watt, M.D.
Director-general of health, New Zealand.

Miss Millicent Vere Webb, F.C.O.G.
Chief medical officer, Women's Medical Service for India.

O.B.E. (Military)

Major A. J. Beveridge, M.C., M.B., R.A.M.C.
Late medical officer, anti-gas wing, Small Arms School, Winterbourne Gunner.

Major A. G. Harsant, F.R.C.S., R.A.M.C.
Surgical specialist, Egypt.

Wing-Commander T. C. Morton, M.R.C.P., R.A.F.

Surgeon Captain C. F. O. Sankey, M.B.

O.B.E. (Civil)

James Frederick Corson, M.B.E., M.D.
Medical officer. Tanganyika Territory.

George Hugh Culverwell, M.D.
Medical inspector of reformatory and industrial schools, Home Office.

Allan Roy Dafoe, M.D.
For public services as a practising physician in Canada.

Major F. A. Gunasekera, M.R.C.S.
Second-in-command, Ceylon, Medical Corps.

Henry Saumarez Hensman, M.R.C.S.
Superintendent, Government Mental Hospital, Madras.

Miss Helen Mary Mayo, M.B.
For work on maternal and child welfare in South Australia.

Frederick Victor Nanka-Bruce, M.B.
For public services in the Gold Coast.

Dadabhoy Dinshaw Variava, F.R.C.S.E.
Civil surgeon, Aden.

M.B.E.

George Ferguson, M.D.
For work on tuberculosis in Canada.

Mrs. Doris Clifton Gordon, M.B.
For work on maternal and child welfare in New Zealand.

Khong Kam Tak, M.B.
Medical Superintendent, Hospital of Perak Chinese Maternity Association, Ipoh, F.M.S.

Mrs. Helena Muriel Pudney, M.B.
For work on child welfare in Nigeria.

Lieut. John Auty Rogers, M.R.C.S.
Assistant to the Surgeon to the Viceroy of India.

Miss Wenefride Thompson, M.R.C.S.
of St. Luke's Hospital, Chabria, Assam.

Kaisar-i-Hind Medal

Miss Emily Gertrude Stuart, M.B.
of Church of England Zenana Mission Society Hospital, Quetta, Baluchistan.

FORTHCOMING CONGRESSES

MEETINGS which have been arranged for the second half of this year include the following:—

June 27th–29th	National Association for the Prevention of Tuberculosis	Southport.
June 27th–July 3rd	International Congress for Military Medicine and Pharmacy	Brussels.
June 29th–July 3rd	Journées Médicales de Bruxelles	Brussels.
June 30th–July 3rd	International Congress on Physical Education	Brussels.
July 1st–3rd	Maternity and Child Welfare Conference	London
July 3rd–5th	Royal Medico-Psychological Association	London.
July 3rd–6th	Oxford Ophthalmological Congress	Oxford.
July 13th–14th	British Association of Radiologists	Birmingham.
July 15th–20th	Royal Sanitary Institute	Bournemouth.
July 20th–21st	European Mental Hygiene Reunion	Brussels.
July 22nd–27th	International Congress on Accidents and Industrial Diseases	Brussels.
July 23rd–27th	International Congress on Life Assurance Medicine	London.
July 27th–30th	International Thalassotherapy Congress	San Sebastian.
July 29th–Aug. 2nd	International Neurological Congress	London.
Aug. 8th–11th	Gastro-Enterology Congress	Brussels.
Aug. 9th–17th	International Physiological Congress	Leningrad & Moscow.
Aug. 25th–30th	All-Russia Congress of Physiotherapy	Odessa.
Sept. 4th	British Association	Norwich.
Sept. 13th–22nd	Dermatological Congress	Budapest.
Sept. 11th–13th	British Medical Association	Melbourne.
Sept. 12th–19th	Tomarkin Foundation Post-Graduate Course	Brussels.
Sept. 23rd–29th	International Congress of the History of Medicine	Madrid.
Oct. 12th–17th	International Society of Medical Hydrology	Brussels.
Dec. 30th–Jan. 4th	International Society of Surgery	Cairo.

more orderly and methodical use of the roads. The new Highway Code, which Parliament had just approved, if studied and observed, would create a sound road practice. As regarded particular measures, undoubtedly the provision of pedestrian crossings have been responsible for the saving of life and limb. The Ministry managed to get about 10,000 put down in London in three months. He was now making a similar effort in regard to the provinces. It was noteworthy that in London, where the safety measures had been chiefly concentrated, there had been a far greater reduction in accidents than in the country as a whole. There had been a reduction in London in the number of killed of 31 per cent., and of injured 16 per cent. in the last eleven weeks of this year as compared with the same period last year. The reductions for the country as a whole in the last eleven weeks had been 16 per cent. in killed and 11½ per cent. in injured, as compared with the same period last year. The speed limit which came into operation on March 18th had served the purpose of making the flow of traffic more agreeable and smooth. The number of casualties, which had fallen in the City, Metropolitan, and borough police areas by 14½ per cent. as compared with 8 per cent. in country police areas, was a rough indication of its success. In the light of experience he was hoping to de-restrict numbers of roads where the speed limit had been unnecessarily applied.

A most distressing feature of the accident returns was the number of children involved. Of the 3517 pedestrians killed on the roads in 1933 no fewer than 1171, or one-third, were children under the age of 15 years. Two inter-departmental committees had been appointed for England and Scotland to draw up a curriculum for teaching road safety in schools. Undoubtedly, many accidents occurred owing to the lack of playing grounds for children. He had decided on the immediate closing of certain streets in London to motor traffic, except when it was proceeding to premises in those streets. (Cheers.) Notice of a regulation would be given this week converting, as an experiment, certain streets in Southwark and Paddington into children's play streets. It was intended to erect notices at the ends of the streets, and to paint the kerbs with green paint. The system had been tried at Salford and Manchester with success. The intensity of the campaign for road safety, which was the most human part of his task, had coincided with and not in any way checked the rapid extension of the use of the roads by mechanical transport. At the end of February there were 224,000 more vehicles licensed than at the corresponding date in 1934, and 441,000 more than at the same period of 1931. The rate at which new vehicles were coming on the roads exceeded all previous records, and already during the first four months of this year 151,268 new vehicles had been registered. They must do everything that they could to provide for this great expansion, and to see to it that the motor vehicle, like every road-using interest, had all the facilities it could reasonably require from the points of view of both convenience and safety. With this intention in view, the Government decided on a five-year plan for the roads. Highway authorities had been invited to send in their proposals on this basis, and there was every indication that the scope of the plan would be in excess of anything that had been yet achieved in a similar period of time. Considerable progress had been made in the provision of non-skid surfaces, and much experimental work in various parts of the country was being conducted by the Ministry's experimental committee in conjunction with the Road Research Board. The Ministry hoped within five years to eliminate all those weak bridges in the possession of railway and other statutory owners which most seriously affected the free flow of traffic. London experience indicated that the tramcar taken in conjunction with its track had a higher accident ratio than the trolley vehicle, and was a greater hindrance to the free flow of traffic. The number of accidents involving personal injury per 100,000 car miles run was slightly over 6 per cent. in the case of trolley vehicles, and was more than 9 per cent. in the case of tramcars. The London Transport Board had already formulated plans for the substitution of more than 40 per cent. of their tramways by trolley vehicles.

Ribbon Development Bill

After further consideration in the House of Lords on May 29th and 30th, the committee stage of this Bill was concluded without further amendment.

HOUSE OF COMMONS

WEDNESDAY, MAY 29TH

Accidents to Boys Underground

Mr. TOM SMITH asked the Secretary for Mines the number of boys under 16 years of age killed and seriously injured underground during each of the last five years.—Mr. ERNEST BROWN replied: In 1930, 24 boys under 16 years of age were killed and 171 seriously injured below ground at mines under the Coal Mines Act. The corresponding figures for 1931 were 25 and 142; for 1932, 17 and 112; for 1933, 15 and 101; and for 1934, 15 and 122.

Mr. WEST: Does not the Minister think that it is deplorable that children of 14 should be so employed when so many adults are unemployed to-day?

Viscountess ASTOR: Will the National Government try to see whether there is a way of stopping the employment of children under 16 in mines?

Supply of Milk to Hospitals

Mr. LEONARD asked the Secretary of State for Scotland if he would expedite a decision on the part of the committee investigating the milk charges demanded from public institutions.—Sir GODFREY COLLINS replied: I have considered the report, and am grateful to the committee for the care with which they have sifted the evidence and arguments placed before them. It appears to me, however, that any proposal requiring a Marketing Board to give special terms to selected classes of consumers raises wide issues of policy, and cannot well be considered merely as a matter of amendment of an existing marketing scheme. The Committee's views will be carefully examined in connexion with the formulation of a policy for the milk industry following upon the temporary measures brought into operation under the Milk Act, 1934. In the meantime it is not practicable to require the Scottish Milk Marketing Board to give effect to the committee's suggestions.

Mr. LEONARD: Is the right hon. gentleman aware that the hospitals in Scotland last year did not know what charges were being made for milk, and that they are now entering into the second year's contracts in total ignorance of what they have to pay, and is the right hon. gentleman also aware that this may possibly react on the use of grade A, tuberculin tested, milk which may be eliminated as a precautionary measure by some hospitals?

Sir G. COLLINS: I hope that the latter suggestion will not develop. The matter raises large issues of policy, and it has been referred to the Milk Reorganisation Committee, who are at present investigating this and other matters.

Mr. LEONARD: Is the right hon. gentleman aware that the report to which he has referred, and which I presume is in his possession, stated that in so far as these institutions are not receiving special treatment it may be said that the action of the Board is not in the public interest? Is the right hon. gentleman going to countenance something that is not in the public interest? If a reduction in charges is made, can he ensure that the reduction will be retrospective?

Sir G. COLLINS: Preference cannot be given to one institution alone. The Consumers' Committee undoubtedly recommended that that step should be taken, but unfortunately or fortunately, the Milk Marketing Board have no power to single out certain classes of institutions for preferential treatment at the moment.

Mr. PALING: Is it not just as necessary to supply cheap milk to public institutions as to ice-cream vendors?

Sir G. COLLINS: The hon. Member must know that the Government have found large sums of money for supplying cheap milk for children in schools.

Post Office Employee's Death from Anthrax

Mr. Thorne asked the Postmaster-General if he had any information to give to the House in connexion with the death of a Post Office employee from anthrax; whether the cause of death was attributable to his employment; what compensation would be paid to his dependants; and if he had any record of similar cases in his department.—Sir E. Bennett, Assistant Postmaster-General, replied: I much regret to say that a sorter was taken ill and died while on holiday. At the inquest the coroner found that death was due to anthrax, but that there was no evidence as to how the deceased had become infected. The deceased's duties did not bring him into contact with any likely source of anthrax, and there would seem no good reason to attribute his death to his employment. A claim for compensation on behalf of his dependants has been received, but on present information there does not appear to be ground for payment of compensation. A gratuity will be payable under the Superannuation Acts. There is no record of a similar case in the Post Office.

Mr. Thorne: I take it for granted that the man in question was on duty at the time, and that being so, surely there is a moral obligation on the Post Office?

Sir E. Bennett: He was on holiday.

Mr. Thorne: He was in your employ at the time.

Mr. Rhys Davies: In view of the fact that a similar case of death from anthrax occurred at Hull—the man was not in the employment of the Post Office—and they could not find the source of the infection, will the hon. gentleman be good enough to get into touch with the Home Office with a view to tightening up the restrictions upon foreign goat hair?

Sir E. Bennett: That is rather a big order for me; but I can assure both the hon. Members, who have taken an interest in this sad case, that it is by no means closed.

Woman's Detention in West Park Mental Hospital

Mr. Groves asked the Minister of Health if he would make inquiry into the case of a lady, Miss A. C. W., who, on July 22nd, 1932, was committed to West Park Mental Hospital from St. John's Infirmary, Battersea, the only allegation made in her certificate being that she stated that the police were the cause of her losing her job; that she thought they had put out their tongues at her, which she resented, and had prevented her earning her living; and, in view of the frivolous nature of such grounds for certification, would he ensure that a proper and complete investigation was made in all such cases before anyone was deprived of their liberty.—Sir Hilton Young replied: The medical certificates contain other facts besides those mentioned in the question; and the report of the medical superintendent of the mental hospital, made within a few days of the patient's admission, confirmed the view that she needed care and treatment. If the hon. Member desires, I shall be willing to communicate to him, confidentially, further particulars of this patient's mental condition. I cannot accept the suggestion implied in the last part of the question, that a proper and complete investigation was not made in this case by the medical practitioner and the magistrate who dealt with it in accordance with the provisions of the Lunacy and Mental Treatment Acts.

THURSDAY, MAY 30TH

Precautions against Anthrax

Mr. Rhys Davies asked the Home Secretary whether his attention had been called to the recent deaths from anthrax at Chester and Hull; and, if so, whether it was possible to take greater precautions at the ports to prevent the spread of this disease.—Sir John Gilmour replied: Yes, sir, but I am afraid that the information at present available in these two cases does not suggest any further precaution which could have been taken at the ports. In neither case has it been possible so far to establish the source of infection.

Card Room Dust and Public Health

Mr. Sutcliffe asked the Home Secretary what progress had been made by the conference of representatives of employers and employees with regard to the provision of compensation in the event of damage to lungs caused by dust in card rooms in the cotton industry.—Sir John Gilmour replied: I am informed that after some preliminary discussions as to how best to deal with the matter both sides are now seeking certain further information with a view to discovering whether it provides a basis for a practical scheme.

Imported Liquid Eggs and Preservatives

Mr. Glossop asked the Minister of Health if he had considered the reports of several public analysts, to which his attention had been drawn, to the effect that sulphurous acid was being used as a preservative for liquid eggs imported into this country; and what action he intended to take to put an end to this practice.—Sir Hilton Young replied: I have recently received a document in which it is stated that one public analyst has found sulphurous acid in a sample of imported liquid eggs. The enforcement of the Preservatives Regulations is a matter for the appropriate local authorities, but I am making inquiries with regard to this case.

Stassanisation of Milk

Brigadier-General Clifton Brown asked the Minister of Health whether his attention had been drawn to a report of the Danish State dairies on the system of stassanisation of milk as a more thorough and economic way of milk treatment than pasteurisation; and whether he would have inquiry made into this treatment.—Sir Hilton Young replied: I am aware of the report referred to by my hon. friend. Stassanisation is a continuous flow process for the heat treatment of milk, and I am advised that pasteurisation by the holding process efficiently operated gives a greater assurance of the complete destruction of pathogenic bacteria than continuous flow processes.

National Health Insurance

Mr. Sutcliffe asked the Minister of Health whether, in view of the National Health Insurance Bill now before the House, he intended to make known to each one of the 200,000 persons affected thereby exactly what was proposed; and, if so, what steps to that end were being taken.—Sir Hilton Young replied: Considerable publicity has been given through the press and otherwise to the proposals contained in the Bill now before the House, and in particular I am satisfied that they are now well known to approved societies, through whom the insured persons affected can obtain information with regard to the proposals. In the event of the Bill becoming law, steps will be taken to ensure that its provisions are made known by the approved societies to all the insured persons concerned.

Cause of Road Accidents

Sir John Power asked the Minister of Transport if he could state whether it was proposed to publish in respect of 1934 a detailed report on the cause of fatal road accidents similar to the report in respect of 1933.—Mr. Hore-Belisha replied: A comprehensive analysis is being made of all fatal road accidents for the present year, and will be published.

The Selling Price of Milk

Mr. Noel Lindsay asked the Minister of Agriculture in how many districts the Milk Marketing Board had tested the elasticity of demand by varying the selling price of milk; and what was the result of these experiments.—Mr. Elliot: Milk is sold by wholesale on contracts covering the period October, 1934, to September, 1935, inclusive. The contracts do not provide for variation of the retail price of liquid milk, except that on the application of a majority of the retailers in any area the Milk Marketing Board may reduce the minimum appropriate retail price for that area. Reductions have been approved by the Board in about 280 areas, but I have no information so far as to what has been the effect on the demand. The arrangements now in force regarding the supply of milk at special rates to school-children have, I understand, resulted in a very considerable increase in the quantity of milk drunk in schools.

Cheap Milk for Hospitals

Captain Peter Macdonald asked the Minister of Agriculture whether the Milk Marketing Board had considered the possibility of arranging for the supply of cheap liquid milk to the hospitals by means of a scheme whereby all hospitals within a given area would undertake to combine to purchase a regular large daily quantity of such liquid milk; and whether he would urge the Board to deal with this matter as one of urgency.—Mr. ELLIOT replied: The position with regard to the price of milk supplied to hospitals was explained in the reply which I gave to my hon. friend the Member for Bolton, and the hon. Member for the St. Rollox division on May 2nd. I am sure that the Milk Marketing Board would at all times be willing to consider any scheme for the bulk purchase of milk which would be to the mutual advantage of producers and purchasers. Any proposals, such as those which my hon. friend indicates, which the hospitals may wish to suggest should therefore be made direct.

Mr. T. WILLIAMS asked whether the Milk Marketing Board had the power within the existing schemes to sell direct to institutions such as hospitals on the basis of any figures they might agree upon.

Mr. ELLIOT said he understood that in some cases hospitals had already combined in order to purchase milk supplies at the lower rates applicable to milk supplies sold wholesale or in large quantities.

Mr. WILLIAMS asked whether the Milk Marketing Board could sell direct to the institutions without retailers taking any part of the ultimate price.

Mr. ELLIOT: Obviously, that does not arise out of the question.

Infant Mortality in Kensington

Mr. JAMES DUNCAN asked the Minister of Health whether he was aware of the high infant-mortality rate last year in Kensington, 93 per 1000 births as compared with 59 per 1000 for England and Wales as a whole; and if he was satisfied that the Kensington borough council was taking all possible steps to reduce it.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: The answer to both parts of the question is in the affirmative. My right hon. friend understands that the borough council have recently decided to add two whole-time medical officers to their staff, with a view to the further development of the valuable work of the infant welfare centres.

Mr. DUNCAN asked if there was any evidence to show that the deaths of these young children were due to any particular cause, or that the deaths were confined to the children of any particular class, such as the unemployed.

Mr. SHAKESPEARE: No, none at all.

Mr. WEST asked if the hon. gentleman was aware that the death rate in the northern part of the division was 102 per cent., which was the highest in London, and that the chief factors in this terrible mortality were stated to be overcrowding, underground rooms, vermin, and high rents; and if that had not something to do with the borough council.

Mr. DUNCAN asked if it was not the case that the highest death-rate was in a ward of South Kensington, and not in North Kensington.

Sir W. DAVISON asked if the Minister was aware that many of the infants returned to swell this abnormally high death-rate were neither born in Kensington nor died there, and that it was only because of the method of registration of the Registrar-General that they were attributed to Kensington.

Mr. SHAKESPEARE said it was not for him to settle a dispute between the Kensington Members. The plain facts were that the housing conditions in Kensington were bad, and that there was a particularly active council in all matters of housing.

Earthquake at Quetta: Public Health Precautions

Sir S. HOARE, Secretary for India, replying to Mr. ATTLEE, made a statement with regard to the situation at Quetta following on the earthquake. He said that the Western Command had assumed control of the situation and were rationing the population. Arrangements were being made to send food and collect casualties in the villages neighbouring on Quetta. Evacuation was proceeding, and would continue so long as there was no outbreak or epidemic against which all possible precautions were being taken by the medical authorities. Patients were being treated in the Indian Military and Cantonment Hospital, where between 4000 and 5000 had been received up to Sunday evening. Refugee camps had also been established on the race-course. Supplies and personnel were being despatched by train and aeroplane from Karachi and Lahore, and the Viceroy had lent his aeroplane for this purpose. The Viceroy had inaugurated a Quetta Earthquake Relief Fund, and had issued an appeal in India, to which he was sure there would be a prompt and sympathetic response.

TUESDAY, JUNE 4TH

Glasgow Veterinary College

Mr. MAXTON asked the Secretary of State for Scotland whether, having regard to the work done by the Glasgow Veterinary College, he would place it on the same footing as the Edinburgh college as regards Government grants.—Sir GODFREY COLLINS replied: State grants were formerly given to the Glasgow Veterinary College, but as there did not appear to be a need for two State-aided veterinary colleges in Scotland, it was decided in 1923 to discontinue the grant to this college. The decision was subsequently supported by the majority of the Departmental Committee appointed in 1924 to consider and advise regarding the general organisation and finance of agricultural education and research in Scotland. I see no reason for departure from the decision then arrived at.

Malarial Commission in Palestine

Mr. THOMAS WILLIAMS asked the Secretary of State for the Colonies whether there was any likelihood of re-establishing the malarial commission in Palestine.—Sir PHILIP CUNLIFFE LISTER replied: The functions of the Malaria Unit which was, I understand, established under Jewish auspices in 1922, were gradually taken over by the Department of Health of the Palestine Government, and the Unit, as such, ceased to exist in 1930. I have no reason to doubt the adequacy of the staff of the Department of Health for their duties in connexion with anti-malaria measures.

JOINT TUBERCULOSIS COUNCIL.—At the May meeting of this council Dr. C. O. Hawthorne said that a feeding experiment would shortly be commenced in which it was proposed to feed 2000 children on raw milk and 2000 on pasteurised milk. Dr. W. Brand reported 20 participants at the post-graduate course held at Victoria Park Hospital at the end of February. Dr. Peter Edwards has held three courses this year at the Cheshire Joint Sanatorium and proposes a fourth, from July 2nd to 4th. Arrangements for the study tour in Denmark are approaching completion, and Brompton Hospital will give a course from Nov. 4th to 9th. Dr. E. Ward said he had conferred with the College of Nursing and the General Nursing Council about post-graduate study in tuberculosis for nurses. Dr. Tytler and Dr. Edwards promised a note for the next meeting on modern methods of sputum examination. It was suggested that the gasolene concentration method might prove more efficient than culture, as in 4 per cent. of specimens of TB+sputum the bacilli were dead.

NUTRITION ADVISORY COMMITTEE.—The Minister of Health and the Secretary of State for Scotland have appointed an advisory committee "to inquire into the facts, quantitative and qualitative, in relation to the diet of the people, and to report as to any changes therein which appear desirable in the light of modern advances in the knowledge of nutrition." The members are: Lord Luke (chairman), Mrs. Eleanor Barton, J.P., Mr. J. N. Beckett, Dr. G. F. Buchan, Prof. E. P. Cathcart, M.D., F.R.S., Mr. R. R. Enfield, Dr. J. Alison Glover, Dr. J. M. Hamill, Mr. A. Bradford Hill. D.Sc., Sir F. Gowland Hopkins, F.R.C.P., F.R.S., Dr. Donald Hunter, Prof. E. Mellanby, F.R.C.P., F.R.S., Sir John Boyd Orr, M.D., F.R.S., Mr. E. C. Ramsbottom, Mr. J. M. Vallance, Mrs. Chalmers Watson, M.D., Mr. J. R. Willis, and Mr. E. H. T. Wiltshire. The secretaries are:—Mr. W. J. Peete, of the Ministry of Health, London, S.W.1, to whom all communications on the subject should be addressed; Mr. N. F. McNicoll, of the Department of Health for Scotland; and Dr. H. E. Magee, of the Ministry of Health (medical secretary).

MEDICAL NEWS

University of Cambridge

Mr. D. H. Barron, of Yale University, has been appointed university demonstrator in anatomy for three years.

University of London

At a meeting of the senate on May 15th the Dunn exhibition in physiology was awarded to Raymond Dudley Blachford and the Dunn exhibition in anatomy was divided between Alan Graham Apley and Philip Henry Wood. Sir Ernest Graham-Little, M.P., was appointed to represent the university at the celebrations of the 300th anniversary of the University of Budapest (Sept. 25th to 28th), and at the ninth International Congress of Dermatology to be held in Budapest from Sept. 13th to 22nd.

Applications are invited for the Geoffrey E. Duveen travelling studentship in oto-rhino-laryngology and for grants for research in this subject. The Laura de Saliceto studentship for the advancement of cancer research has also to be filled, while the William Julius Mickle fellowship will be awarded to the graduate of the university who has done most to advance medical art or science within the last five years. Particulars of the three appointments may be had from the academic registrar.

A conference for medical officers in industry on leave from the tropics will be held at the London School of Hygiene and Tropical Medicine on July 9th and 10th.

At a meeting of the university court held on May 29th a resolution of thanks was passed to Messrs. Bovril Limited who have instituted at King's College two research studentships in physiology at £350 a year and will defray in addition the cost of the special materials, apparatus, and assistance needed.

Society of Apothecaries of London

A court dinner of the society was held on June 4th in the society's hall, when Dr. Wakelin Barratt, deputy master, presided. The occasion was the presentation to Sir Frederick Banting of the Society's gold medal in therapeutics. Sir William Willcox, senior warden, in presenting Sir Frederick to the deputy master, intimated in warm terms the significance of such a discovery as that of insulin, pointing out the part played in medical progress by such fruitful researches. Sir Frederick Banting, in reply, referred to the scientific activity of his university, the University of Toronto, and spoke eloquently of the closeness of the ties which bound Canada to the mother country in spite of the seductive opportunities offered in the contiguous United States. Sir Frederick Banting's words were received with general applause.

At recent examinations the following candidates were successful :—

MASTERY OF MIDWIFERY

Marie L. P. Crawford, Alice B. Field, Gwendolen E. Kaines, and Mary M. Mackenzie.

University of Wales

At recent examinations the following candidates were successful :—

TUBERCULOUS DISEASES DIPLOMA

Honoria Aughney, Elizabeth M. R. Garrigan, Dorothy M. James, R. A. N. McMath, Nora O'Leary, G. E. Ranawake, K. V. Rao, Amarnath Sah, M. E. Salem, Dhirendranath Sanyal, and A. L. H. E. Sayed.

Society for Relief of Widows and Orphans of Medical Men

At the annual general meeting held on May 22nd, Mr. V. Warren Low being in the chair, the report for 1934 was presented showing that during the year 57 widows and 9 orphans received relief. The sum of £2885 10s. was granted from ordinary funds, £1664 8s. from the Brickwell fund, £80 from the Copeland fund, and a Christmas present amounting to £640. The total income was £5405, total expenses £358. There are now 262 members of the society. Membership is open to any registered medical man who, at the time of his election, is residing within a twenty-mile radius of Charing Cross. Particulars from the secretary, at 11, Chandos-street, London, W.1.

Queen's University of Belfast

The senate of the University has decided to confer the honorary degree of LL.D. on Dr. T. G. Moorhead, regius professor of physic in the University of Dublin; and of D.Sc. on Dr. Thomas Carnwath, senior medical officer in the Ministry of Health, and Colonel W. P. MacArthur, deputy director-general of Army Medical Services.

Indian Medical Service

The annual dinner will be held at the Trocadero Restaurant on Wednesday, June 19th, at 7.15 for 7.30 P.M., when Major-General E. A. Walker, director of medical services in India, will take the chair. Officers can arrange to sit near their friends as separate tables will be provided. Application for tickets should be made to Sir T. Carey Evans at Hammersmith Hospital, Ducane-road, London, W.12, or to Mr. A. W. Brown, c/o Messrs. Grindlay and Co., 54, Parliament-street, S.W.

Royce Research Fellowships

The trustees of the will of the late Sir Frederick Henry Royce created two research fellowships, each of the value of £500 per annum, tenable for three years with a possibility of extension. The subject of investigation is to be the cause and cure either of influenza or of the common cold. It was arranged the University of London should recommend a selected applicant for one of the fellowships whilst the Victoria University of Manchester should act similarly in respect of the other. The trustees have appointed to the London fellowship Dr. Charles Herbert Stuart Harris, whose investigations will be carried out at the British Postgraduate Medical School, Hammersmith. No appointment has yet been made for Manchester.

Mental Hygiene Congress

The third European Mental Hygiene Reunion will be held in Brussels on July 20th and 21st, and it will be followed by a congress of medical alienists and neurologists under the auspices of the Belgian League for Mental Hygiene. The first subject for discussion will be the boarding-out treatment for mental patients, at which Dr. G. Corberi (Milan), Dr. F. Sano (Gheel Colony), and Dr. J. Vié (Aimay-le-Château Colony) will speak. The openers of the second discussion on punishments and restrictions in the family and in the school will be Dr. Heinrich Meng (Basle) and Dr. H. Crichton-Miller (London). The last session will be devoted to a discussion on mental hygiene and the press, to which Dr. O. L. Forel (Nyon) and Dr. J. van der Spek (Rotterdam) will contribute. Further information may be had from the secretary of the National Council for Mental Hygiene, 78, Chandos House, Palmer-street, London, S.W.1.

Liverpool Psychiatric Clinic

At the annual meeting of this clinic, held on May 23rd, at the Rushworth Hall, Miss Martha Jackson of Philadelphia spoke on occupational therapy in American hospitals and clinics, and Dr. R. G. R. Burrows described the work of the Maghull epileptic colony. During last year 232 new patients attended the clinic, making 1483 attendances. This total, although large, is limited solely by lack of staff, and a half-time medical registrar has now been appointed. Of the new patients 83 were women, 68 men 61 adolescents and 20 children: 63 per cent. of the cases were referred to the clinic by their own doctors; 35 per cent. of those attending the clinic are under 20 years. The cases fall roughly into five main groups—nervous disorder 95, mental disorder 56, behaviour disorder 38, mental deficiency 27, organic disease 16. The comparatively large proportion of cases of early mental disorder is regarded as satisfactory for three reasons. First, a proportion can at the outset be recognised as recoverable without resort to drastic measures. Secondly, cases likely to benefit from mental hospital treatment can be brought into touch with its possibility at an early date. Thirdly, there is evidence of a growing demand of the public for mental treatment. By virtue of its independent position the clinic can act as a liaison between the public and its medical service on the one hand and the mental hospitals on the other.

Microchemical Club

The fourth meeting of this club will be held at 11 A.M. on Saturday, July 13th, at the National Physical Laboratory. Lectures will be given by Prof. H. V. Briscoe, Prof. H. D. Kay, and Mr. L. J. Harris, D.Sc. The hon. secretary is S. J. Folley, National Institute for Research and Dairying, Shinfield, near Reading.

All-India Ophthalmological Society

The fourth conference of this society was held at Madras from April 22nd to 24th, under the presidency of Lieut.-Colonel R. E. Wright. The proceedings included a symposium on nutritional disorders of the eye. The discussion centred chiefly around keratomalacia or xerophthalmia, and contrary to views expressed by workers in England and elsewhere, it was held that skin rashes were not considered more frequent in cases of keratomalacia than in the general hospital population, with the exception of lichen pilaris. The same was true of pyogenic infections in general.

British Social Hygiene Council, Incorporated

The annual general meeting will be held during the Imperial Social Hygiene Congress at the London School of Hygiene and Tropical Medicine, Keppel-street, London, W.C.1. The presidential address will be delivered on July 8th, and will consist of a survey of 21 years' work. A business meeting will be held at 2 P.M. on Friday, July 12th. With the notice of these meetings there is a request for members to make known to others the holding of a summer school session at Cambridge. The school will be opened at Westminster College, Cambridge, on July 30th, and will be in session until August 6th; all communications concerning it should be addressed to the secretary of the Council, Carteret House, Carteret-street, London.

Fellowship of Medicine and Post-Graduate Medical Association

A week-end course in infectious diseases will be held at the Park Hospital, Hither Green, on May 15th and 16th, and a clinical and pathological course at the National Temperance Hospital at 8 P.M. on Tuesdays and Thursdays, June 11th to 27th. Other forthcoming courses include: chest diseases at the Brompton Hospital (5 P.M. on Mondays, Tuesdays, and Fridays, June 11th to July 8th); cardiology at the National Hospital for Diseases of the Heart (June 24th to July 6th); "refresher" courses at the Prince of Wales's Hospital (June 17th to 29th and July 1st to 13th); proctology at St. Mark's Hospital (July 1st to 6th); urology at the All Saints' Hospital (July 8th to 27th); medicine and surgery at the Southend General Hospital (July 13th and 14th); and dermatology at the Blackfriars Skin Hospital (July 15th to 27th). A panel of teachers is prepared to give individual instruction in various branches of medicine and surgery, daily. With the exception of the cardiology course, courses and clinics arranged by the fellowship are open only to members and associates. The secretary of the fellowship may be addressed at 1, Wimpole-street, London, W.1.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

FRIDAY, June 14th.

Ophthalmology. 5 P.M. (Cases at 4.30 P.M.) Annual General Meeting. Mr. G. T. Willoughby Casbell and Mr. A. Hugh Thompson: A Pedigree Congenital Optic Atrophy differing from Leber's Disease and embracing Four Generations. Mr. Eugene Wolff: The Use of Adrenaline in Atropine and Hyoscine Irritation.

Laryngology and Otology. 9.45 A.M. (Physiological Lecture Theatre, Bristol University). Mr. J. Morris: Electrical Hearing Aids. Mr. W. M. Mollison: Operative Treatment of Vertigo. Mr. C. S. Hallpike: Recent Work on the Electro-physiology of the Mammalian Cochlea. 2.45 P.M., Clinical Meeting in the Out-patient Department at the Bristol Royal Infirmary.

Urology. Visit of the Dutch Urological Society. 10 A.M. (St. Paul's Hospital). Operations and Demonstrations. 2.30 P.M. (St. Peter's Hospital). Operations and Demonstrations.

SATURDAY.

Laryngology and Otology continued. 9.45 A.M. (Physiology Theatre, Bristol University), Mr. E. Watson-Williams: Affections of the Eyeball in Sinusitis. Discussion: Obstructions of the Trachea.

Urology continued. 10 A.M. (Middlesex Hospital), Operations and Demonstrations. 2.30 P.M. (All Saints' Hospital), Operations and Demonstrations.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, June 11th.—9 P.M. (Great Western Royal Hotel, Paddington), Dr. G. E. Oates: Some Housing Problems in Paddington.

RESEARCH DEFENCE SOCIETY.

WEDNESDAY, June 12th.—3 P.M. (London School of Hygiene and Tropical Medicine, Keppel-street, W.C.), Annual General Meeting. Sir Frederick Hobday: The Relief of Animal Suffering. (Stephen Paget lecture.)

SOUTH-WEST LONDON MEDICAL SOCIETY.

WEDNESDAY, June 12th.—9 P.M. (Bolingbroke Hospital, Wandsworth Common), Dr. Robert Hutchison: Constitutional Medicine. (Bolingbroke lecture.)

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.

THURSDAY, June 13th.—8.30 P.M. (11, Chandos-street, W.), Dr. A. Baldie: Homosexuality is Detrimental both to the Individual and to Society.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

THURSDAY, June 13th.—8.30 P.M. (Kensington Town Hall), Prof. Edward Mellanby, F.R.S.: Proper Feeding, the First Essential for Good Physique and Health. (Cavendish lecture.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 10th, to SUNDAY.—LONDON LOCK HOSPITAL, Dean-street, W. Afternoon Course in Venereal Diseases.—PARK HOSPITAL, Hither-green. Sat. and Sun., course in infectious diseases.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Clinical and Pathological Course, Tues., and Thurs., 8 P.M.—BROMPTON HOSPITAL, S.W. Course in chest diseases. Mon., Tues., and Fri., 5 P.M.—Courses of instruction and clinics arranged by the fellowship are open only to members and associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, June 13th.—2 P.M., Dr. W. W. Payne: Carbohydrate Metabolism. (3) Influence of the Ductless Glands. 3 P.M., Dr. A. A. Moncrieff: Congenital Heart Disease.

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

INSTITUTE OF CHILD PSYCHOLOGY.

WEDNESDAY, June 12th.—6.15 P.M. (Friends House, Euston-road, N.W.), Dr. Alan Moncrieff: The Effect of Illness upon Temperament. 8.15 P.M., Dr. Margaret Lowenfeld: Play, Phantasy, and Experience.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.

WEDNESDAY, June 12th.—3 P.M., Dr. H. Crichton-Miller: Frigidity. 4.30 P.M., Dr. Cedric Shaw: Sexual Difficulties.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, June 11th.—4 P.M. (St. James' Hospital, Ouseley-road, S.W.), Mr. J. P Monkhouse: Treatment of Suppurative Otitis Media.

INSTITUTE OF PATHOLOGY, St. Mary's Hospital, W.

THURSDAY, June 13th.—5 P.M., Dr. J. Henderson Smith: Virus Disease in Plants: a Comparison with Virus Disease in Animals.

UNIVERSITY OF BIRMINGHAM.

THURSDAY, June 13th.—4 P.M. (Medical Lecture Theatre, University, Edmund-street), Prof. K. Douglas Wilkinson: Acute Rheumatism and its Results. (First of two Ingleby lectures).

FRIDAY.—4 P.M. (Queen's Hospital), Prof. Bertram Lloyd: Demonstration of surgical cases.

Appointments

AINSWORTH-DAVIS, J. C., M.D. Camb., F.R.C.S. Eng., has been appointed Hon. Urological Registrar to St. Paul's Hospital, Endell-street, London.

BARRAN, G. F., M.B. Camb., Second Assistant to the Medical Superintendent at the Liverpool Sanatorium, Frodsham.

BENNETT-JONES, M. J., M.B. Liverp., F.R.C.S. Eng., Hon. Surgeon to the Bootle General Hospital.

DAVIES, A. L., M.R.C.S. Eng., School Medical Officer for Carmarthen.

LOWE, T. E., M.D. Melb., M.R.C.P. Lond., Medical Registrar at St. Mary's Hospital, London.

MCLENNAN, W. A., M.B. Glasg., D.P.H., Medical Officer of Health and School Medical Officer for Leigh, Lancashire.

OSLER, T. G., M.B. Cape Town, Medical Registrar at St. Mary's Hospital, London.

RUSHTON, M. A., M.B. Camb., L.D.S. Eng., Assistant Dental Surgeon, Guy's Hospital.

Certifying Surgeons under the Factory and Workshop Acts: Dr. D. M. HUGHES (St. Clears, Carmarthenshire): H. P. WILLIAMS (Anstey, Leicestershire): Dr. W. DEAN (Wivenhoe, Essex); Dr. A. J. Gibson (Brentwood, Essex); Dr. W. SHAW (Blairgowrie, Perthshire); Dr. R. J. TAIT (Towcester, Northamptonshire).

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Sen. Res. M.O.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

Aylesbury, Royal Buckinghamshire Hospital.—Sen. Res. M.O. £200. Also Second Res. M.O. £150.

Barnsley. Beckett Hospital and Dispensary.—H.P. £200.

Barnsley County Borough.—Asst. M.O.H., &c. £500.

Bath Royal United Hospital.—H.P. £150.

Bedford County Hospital.—First and Second H.S. At rate of £155 and £150 respectively.

Birmingham, Imperial Chemical Industries, Limited.—Asst. M.O. £500.

Birmingham University, Faculty of Medicine.—Lecturer in Bacteriology and Asst. Bacteriologist in Public Health Laboratory. £400.

Blackburn Royal Infirmary.—Res. Surg. O. £250. H.S. £175. Also Cas. O. £150.

Bolton Royal Infirmary.—Two H.S.'s. Each £125.

Bradford Royal Eye and Ear Hospital.—H.S. £160.

Brighton, Royal Sussex County Hospital.—Two Hon. Dental Surgeons.

Bristol General Hospital.—Two H.P.'s, two H.S.'s. Res. Obstet. O. H.S. to Spec. Depts. Also Cas. H.S. Each at rate of £80.

Bristol University.—Lectureship in Physiology. £400.

Bucks County Council.—Asst. County M.O. and M.O.H. £800.

Burnley, Municipal General Hospital.—Jun. Res. M.O. £150.

Cheltenham General and Eye Hospitals.—H.P. £200.

Chesterfield and North Derbyshire Royal Hospital.—Cas. O. and Fracture H.S. Also H.S. to Ear, Nose and Throat, and Eye Depts. At rate of £200 and £150 respectively.

Colchester Essex County Hospital.—Asst. H.S. £120.

Connaught Hospital, Walthamstow, E.—H.S. At rate of £100.

Derby, Bretby Hall, Orthopædic Hospital, near Burton-on-Trent. Locum Res. Asst. M.O. At rate of £350.

Doncaster Royal Infirmary.—H.S. to Eye and Ear, Nose and Throat Depts. £175.

Derbyshire Hospital for Sick Children.—Res. H.S. At rate of £150.

Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. Each at rate of £110.

Edinburgh Royal Infirmary.—Clin. Asst. in Dept. of Ophthalmology. £200.

Essex County Council Oldchurch Hospital, Romford, &c.—Asst. M.O. £600.

Fulham Borough Council.—M.O.H. £1,100.

General Post Office, Headquarters Medical Branch.—A.M.O. £500.

Grosvenor Hospital for Women, Vincent-square, S.W.—Gynæcological Surg.

Guildford Royal Surrey County Hospital.—H.S. £150.

Hampstead General and North West London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.

Harrogate Royal Bath Hospital.—Res. M.O. £156.

Hastings, Royal East Sussex Hospital.—Jun. H.S. At rate of £150.

Hertford County Hospital.—H.S. At rate of £180.

Hull Municipal Maternity Home and Infants' Hospital.—Jun. Res. M.O. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.P. £120.

Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £100–£200.

Keighley and District Victoria Hosp.—Res. M.O. At rate of £180.

King Edward VII Sanatorium, Midhurst.—First Asst. M.O. £500.

King's College Hospital, Denmark Hill, S.E.—Asst. Physician.

Lambeth Hospital, Brook-street, Kennington, S.E.—Temp. Pathologist to assist Officer in Charge at Group Laboratory. At rate of £650.

Leeds City Hospital for Infectious Disease.—Med. Supt. £840.

Leicester, County Sanatorium and Isolation Hospital.—Jun. Res. M.O. £250.

Liverpool Royal Children's Hospital.—Hon. Physician.

London Hospital, E.—First Asst. to Gynæcological and Obstetric Dept. £250.

London Skin Hospital, Fitzroy-square, W.—Hon. Physician.

London University.—University Readership in Surgery. £800. External Examinerships. Chair of Dental Prosthetics at Guy's Hospital Med. School. £1000. Also University Readership in Anatomy. £550.

Maidstone, West Kent General Hospital.—H.S. £150.

Manchester Ancoats Hospital.—H.S. At rate of £100.

Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S. Also Res. H.S. At rate of £150 and £120 respectively.

Manchester Northern Hospital, Cheetham Hill-road.—Res. M.O. Also Two H.S.'s. £150 and £100 respectively.

Manchester, St. Mary's Hospitals.—Two H.S.'s for Whitworth-street West Hospital. Also Two H.S.'s for Whitworth Park Hospital. Each at rate of £50.

Manchester, Withington Hospital, &c.—Jun. Asst. M.O. £200.

Marie Curie Hospital, Fitzjohn's-avenue, N.W.—Res. M.O. At rate of £100.

Mitcham, Surrey Wilson Hospital.—Res. M.O. At rate of £120.

National Temperance Hospital, Hampstead-road, N.W.—Cas. O. and H.P. At rate of £120 and £100 respectively.

Newcastle-upon-Tyne, Leazes Hospital.—Two H.S.'s. Each at rate of £100.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. Appointments. Each at rate of £50.

New Zealand, General Hospital, Auckland.—Sen. Surg. O. Also Sen. Med. O. Each £650.

Northampton, County Mental Hospital, Berrywood.—Med. Supt. £900.

Plymouth, Prince of Wales's Hospital.—H.P., Res. Anæsthetist. Also H.S. to Spec. Depts. Each at rate of £120.

Preston and County of Lancaster Queen Victoria Royal Infirmary. Special H.S. At rate of £150.

Princess Elizabeth of York Hospital for Children, E.—H.P. and H.S. Each at rate of £125.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S. At rate of £100.

Royal College of Physicians of London.—Leverhulme Research Scholarship. £500.

Royal Masonic Hospital, Ravenscourt Park, W.—Res. Surg. O. At rate of £250.

St. Mary's Hospital for Women and Children, Plaistow, E.—Pathologist. £200.

St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—Clin. Assts. to Hon. Staff.

St. Thomas's Hospital, S.E.—Hon. Registrar to Skin Dept.

St. Thomas's Hospital Medical School.—Demonstrator in Physiology. £400.

Salford Royal Hospital.—Two H.S.'s. Each at rate of £125.

Salisbury General Infirmary.—Res. M.O. £250.

Salvation Army, Mother's Hospital, Lower Clapton-road, N.—Two Jun. Res. M.O.'s. At rate of £80.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Hon. Surgeon to Out-patients. Also Registrar. £150.

Sheffield Royal Infirmary.—Two H.S.'s. One H.P. Aural H.S. Ophth. H.S. Also Asst. Cas. O. Each at rate of £80.

Shoreham-by-Sea, Sussex, Southlands Hospital.—Asst. M.O. £300.

Somerset and Bath Mental Hospital, Cotford.—Second Res. Asst. M.O. £350.

Southend-on-Sea County Borough.—Med. Supt. for Council's Infectious Diseases Hospitals. £750.

Southend-on-Sea General Hospital.—H.S. to Orthopædic and Cas. Dept. £100.

Stafford, Staffordshire General Infirmary.—H.P. and Cas. O. At rate of £150.

Stirling District Mental Hospital, Larbert.—Jun. Asst. M.O. £300.

Swansea Cefn Coed Hospital.—Asst. M.O. £350

West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.

West London Hospital, Hammersmith-road, W.—Cas. O. £250. Also H.P. and 2 H.S.'s. Each at rate of £100.

West Riding Mental Hospital, Wakefield.—Fifth Asst. M.O. £350.

Weston-super-Mare General Hospital.—Res. H.P. £150.

Wigan Royal Albert Edward Infirmary and Dispensary.—Res. Med. and Surg. O. and Reg. £250. Also H.S. At rate of £150.

Willesden General Hospital, Harlesden-road, N.W.—Res. Cas. O. At rate of £100.

Windsor, King Edward VII. Hospital.—Res. M.O. £150. Also Three H.S.'s. Each at rate of £100.

Wolverhampton, Royal Hospital.—H.S.'s. Asst. Res. M.O. Each at rate of £100. Also H.P. At rate of £125.

Worksop, Victoria Hospital.—Sen. H.S. At rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Medbourne (Leicestershire), Portree (Invernesshire), Furnace (Argyllshire). Latest date for receipt of applications June 18th.

Births, Marriages, and Deaths

BIRTHS

BIRCH.—On May 24th, at the Royal Infirmary, Liverpool, the wife of C. Allan Birch, M.D. Liverp., of Hazelwood-court, N., of a son.

HORDER.—On May 25th, at Tunbridge Wells, the wife of Cecil A. Horder, F.R.C.S. Eng., of a son.

MCMICHAEL.—On May 19th, at Vowchurch, Herefordshire, the wife of G. B. McMichael, M.R.C.S. Eng., of a son.

MICKS.—On May 29th, the wife of W. T. Micks, M.B. Dub., of Hull, Yorks, of a son.

MORGANS.—On May 21st, at Bristol, the wife of C. Christopher Morgans, M.R.C.S. Eng., of a son.

RENNIE.—On May 27th, at Colombo, Ceylon, to Jean Marcella Rennie, M.B. Edin., wife of Gilbert McCall Rennie, M.C., Ceylon Civil Service—a son.

WILLIAMS.—On May 30th, at Devonshire-place, W., the wife of Leslie Williams, M.D., M.S. Lond., of a son.

MARRIAGES

GOODCHILD—BARHAM.—On May 14th, at Kabale, Uganda, Roy Theodore Scovel Goodchild, M.B. Lond., to Muriel Mary, elder daughter of the late Harold Barham, of Wimbledon.

DEATHS

BEVAN.—On May 22nd, 1935, Richard Bevan, L.R.C.P. Lond., M.R.C.S. Eng., D.P.H., and Gold Medallist, of 2, Park-avenue, East Sheen, S.W.14, aged 81 years.

BRECHIN.—On May 31st, at the Bensil, Carnoustie, the residence of his brother-in-law, William Adam Brechin, M.C., M.B. Glasg.

HABGOOD.—On May 24th, at Clifton, Bristol, Henry Habgood, V.D., M.D. Brux., late of Eastbourne, in his 87th year.

PURKIS.—On May 30th, at Guy's Hospital, Kenneth Noel Purkis, M.C., F.R.C.S. Eng., of Beckenham, aged 42.

RECKITT.—On May 27th, at Thames Ditton, Lieut.-Colonel John Dennis Thorpe Reckitt, late R.A.M.C., aged 80.

ROSE.—On May 30th, in a London nursing-home, Frank Atcherley Rose, F.R.C.S. Eng., late of Wimpole-street, W.

SHACKLETON.—On June 1st, at Bushey, William Webb Shackleton, M.D. Dub., aged 67.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

UNFIT HOUSES

A CREDITABLE commentary on Part II. of the Housing Act, 1930, which deals with the repair or demolition of individual insanitary houses, has been compiled by Mr. H. G. Clinch, F.S.I.A., and Mr. B. G. Bannington.[1] In considering the need of defining "fitness," they state that the position is so unsatisfactory that at the Sanitary Inspectors' Conference, 1934, the opinion was expressed that "minimum standards of fitness should be laid down by housing legislation." Yet on the preceding page the authors themselves admit that "what (standard) would be normal and reasonable in a big town would be infrequent and perhaps impossible in many villages." The authors apparently realise the impossibility of laying down hard-and-fast standards for the country generally.

A number of pages are devoted to standard specifications dealing with repairs and alterations to dwelling-houses, and the reader is invited to follow the "procedure set out with appropriate variations when dealing with houses under Sections 17, 19, and 20 of the 1930 Act." These specifications deal with practically everything in a dwelling-house from the chimney-pots down to the foundations, but omit reference to ventilated food storage accommodation, vermin, and paintwork; yet food must be stored somewhere, preferably in a cool ventilated place; houses should be free from vermin; and paint is necessary to preserve and maintain dwellings in proper condition. In their prefatory remarks, the authors state that Part II. is "full of pitfalls into which even the wariest may slip." Lest this and other comments should discourage inexperienced officers from making use of valuable legislation, it is important to emphasise the fact that sufficient experience of this legislation has been obtained and made available in "case law" and elsewhere, to enable officers of local authorities to use with success this strong weapon against bad housing conditions.

ALLERGIC DERMATOSES

A TENTATIVE classification of allergic dermatoses is suggested by Sulzberger, Wise, and Wolf, who illustrate it in schematic and tabular form (Jour. Amer. Med. Assoc., April 27th, 1935, p. 1489). The first three groups in their classification relate to the eczematous, the tuberculin and the urticarial reactions. Each has its particular "shock tissue," its type of lesion, time factor, and characteristic test—e.g., the patch and scratch tests. They point out that there tends to be a common factor in the causative agents in each group; thus substances producing eczematous reactions tend to be keratolytic or to have an affinity for epidermal tissues. The fourth group is a miscellaneous one, including drug and other reactions, and awaits further elaboration. The authors themselves would probably agree that no such classification can be rigidly adhered to, but it is likely to be helpful as indicating certain broad features in these reactions and in pointing to lines of investigation.

PRESCRIBING IN BRISTOL

A PHARMACOPŒIA, issued jointly by four Bristol voluntary hospitals, contains a comprehensive range of formulæ. It has been revised in accordance with the B.P. 1932 and brought up to date. The ingredients are given in full Latin and the quantities in the imperial system, with no mention of metric equivalents, even for substances like *neoarsphenamine* and sulpharsphenamine which are always prescribed metric. The formulæ are a curious mixture of ancient and modern. Mistura Coryzæ (p. 24) contains ten different ingredients, a perfect example of polypharmacy, and the formulæ for Mist. Acid. Acetyl-salicyl. Citrata, Pulv. Strontii Lactat. Co., and Syrup. Camph. Co. appear unnecessarily complicated. On the other hand, the salicylic ester of dihydroxy-ethane ("S.E.D."), a comparatively new synthetic, is given a short monograph to itself and is used in two liniments. Only two formulæ for compressed tablets are given and 19 for pills. This is against the trend of modern hospital practice where pills are being largely displaced by tablets. The section entitled Treatment of Poisoning is excellent, but it is rather startling to see sulphonal and trional included here among the barbiturates. A list of synonyms would have been more useful if the well-known trade names were alphabetised rather than the lesser known chemical names. Mistakes are rare and trivial and the booklet contains much of value for the practitioner. It is printed for private use but may be had (3s.) from the secretaries of the Infirmary, Hospital, Children's Hospital, and Eye Hospital.

CIRCULATION AND LUNGS

AT the eighth meeting of the Deutschen Gesellschaft für Kreislaufforschung, held at Wiesbaden in March, the communications included a number of interesting papers on the physiology of the circulation. In particular, problems of the relationship of respiration to the cardiovascular system were discussed. W. R. Hess (Zürich), speaking on the respiratory changes brought about by changes of blood pressure acting through nervous stimuli from the heart, aorta, or carotid sinus, emphasised that the respiratory centre cannot be regarded as the only primary governing control for the regulation of respiration. M. Hochrein (Leipzig), dealing with œdema of the lung, stressed the need for treatment of the respiratory mechanism, and of the nervous system. With other speakers he referred to the beneficial effects of luminal in this condition. The numerous important reflex effects upon the circulation from other organs were exemplified by the account of the "feeding reflex" which leads to an increase in the cardiac output after the intake of food. E. Reinhardt (Berlin) described atelectasis, or collapse of lung, as mainly due to reflex contraction of the muscle-fibres in the lung tissue, and emphysema as a widening of the alveoli and acini following a lowered excitability of this muscular tissue. In the former the result was hyperæmia with exudation and fibrosis; in the latter it was ischæmia with actual disappearance of alveolar walls. Acute massive collapse he regarded as a nervous contraction of the bronchial muscle of reflex origin.

Among a number of other subjects considered may be mentioned the use of carbon dioxide for intermittent claudication and endarteritis. A favourable report was given on the effect of this gas injected subcutaneously in such conditions.

T.C.P. B^3 COLLOIDAL EMULSION (British Alkaloids Ltd., Winchester House, London, E.C.).—Some five years ago a note on this preparation was made in THE LANCET, and a later reference to the contents and doses of the preparation will be found in our columns of April 23rd, 1932, p. 918. We have now received from the manufacturers three brochures, setting out that the emulsion has been found of value in the treatment of bacillary dysenteries and intestinal toxæmia, while with a slight alteration in composition it has proved of service in the rheumatoid diatheses. This would be expected, as disinfection of the intestinal tract is a regular procedure in the treatment of many conditions which fall under the denomination of rheumatic or rheumatoid. In all three brochures there is careful reference to recognised authority for the statements and deductions.

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[1] Unfit Houses: A Guide to Part II. of the Housing Act 1930 for Local Representatives and Officers. By H. G. Clinch, F.S.I.A. M.R.S.I., and B. G. Bannington. London: H. K. Lewis and Co., Ltd. 1935. Pp. 78. 3s. 6d.

ADDRESSES AND ORIGINAL ARTICLES

FURTHER OBSERVATIONS ON LUNG ABSCESSES AND THEIR TREATMENT

By A. J. Scott Pinchin, M.D., F.R.C.P. Lond.

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H. V. Morlock, M.C., M.D., M.R.C.P. Lond.

PHYSICIAN TO THE CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS; ASSISTANT PHYSICIAN TO THE MILLER GENERAL HOSPITAL AND TO HAMPSTEAD GENERAL HOSPITAL

If excuse be needed for a further paper on this subject we may quote an annotation from this journal on a series of papers dealing with abscesses of the lung: "From small collections of clinical impressions such as these it may become possible in time to obtain an individual experience which will bring to bear at the right moment all the weapons available for use in this distressing condition." At present the expressed opinions of authorities differ *toto cœlo*, and in consequence it is difficult to assess treatments adequately.

These tentative views and uncertainties will be appreciated by those who have followed the discussions at the Royal Society of Medicine and elsewhere. It appears to us that a great deal of this hiatus is due to the lack of adequate classification of the various *types* of the disease, each of which requires a different method of attack. During the past five years we have spent much time in investigating such cases and have collected a series of 100. In October, 1930, we described in this journal 27 cases treated medically and surgically; the results left much to be desired, and at the end of that year we started our bronchoscopic clinic. In 1932 we recorded a further 25 cases treated bronchoscopically, and here the results were so satisfactory that we were encouraged to continue. During the past two years a further 55 cases have been through our clinic; these have been sent from all over the country and in various stages of the disease, mainly rather advanced. On the experience gained from this increasing number of cases we have somewhat modified the opinions on treatment which we have previously set out, and in this paper we propose to state our present views, with the full realisation that further experience may cause their further modification.

Classification

The diagnosis of the ordinary type of lung abscess has been sufficiently ventilated elsewhere, and on this occasion our concern is with those cases difficult of diagnosis and more especially with recognition of the *type* of abscess present, as a lead to prognosis and the best method of treatment. Generally it may be conceded that in a case of lung abscess, after pus has been expectorated, the symptoms are of more importance than the physical signs; before this X rays are of more help than either.

We have no knowledge of interstitial abscess, but in our experience it is rare for an abscess to attain any degree of maturity without some periodic discharge from the bronchus.

In considering the pathological types of abscess it is usual to divide them into "acute" and "chronic," whilst some authors make a special feature of the gangrenous type. This classification is certainly not an adequate one on which to base treatment. The division of acute and chronic is an arbitrary one, depending to some extent on the rapidity of breaking down, but more commonly on a time factor, the condition being regarded as acute for the first eight or ten weeks, after which it automatically becomes chronic. We are of the opinion that the classification should be more elaborate and suggest some such division as the following.

1. Pre-abscess stage of pneumonitis.
2. Pyogenic type
   - Simple (with or without localising reaction).
   - Gangrenous or liquefactive type.
3. Putrid or spirochætal type
   - Secondary to simple.
   - With local reaction.
   - Fulminating gangrenous.
4. Multiple: Simple pyogenic or gangrenous.

A definition of the reactive conditions mentioned is necessary.

On X ray examination the simple abscess begins as an homogeneous shadow in the lung field; this may clear up, but usually, later, in the centre of this is seen a darker circular area due to cavitation. At this stage any of three things may happen: (*a*) the cavity after drainage may close and the area of pneumonitis disappear; or (*b*) the area showing cavity may rapidly extend until the whole area affected by pneumonitis becomes a cavity—which may be enormous. This we would define as the liquefactive or simple gangrenous type. Lastly, (*c*) the cavity may remain but may be surrounded by a condensed area of tissues recognised in radiograms as a limiting ring.

The putrid or spirochætal type, if primary, breaks down rapidly and the X ray picture is similar to that of the acute spreading pyogenic type, except that the general condition of the patient is worse; however, if the spirochætal infection is secondary to a pyogenic abscess there is often a primary localising reaction and the progress may not be so acute.

A patient with lung abscess is usually very ill, but occasionally the systemic symptoms may not be at all conspicuous; especially is this so in apical abscess with good drainage. Except in these milder cases the disease appears to have a serious effect on the psychological state of the patient and loss of morale is often a very marked feature. The temperature is usually of a high grade with a rapid pulse, but when the pus has discharged either naturally or by drainage the temperature and pulse-rate fall. A continuous high or rising pulse-rate, even though the temperature is slight, is usually an indication of a spreading non-localised type of disease with a bad prognosis apart from surgical intervention.

It must be borne in mind that the simple abscess in its earlier stages may present periods of normal temperature and no sputum, giving the erroneous impression that healing has occurred—a hope shattered by an exacerbation and further expectoration of pus. A fact of even more importance is that the abscess may be spreading whilst the patient shows no systemic symptoms.

Though the patient with a simple lung abscess may be a sick man, his state is nothing in comparison with the profound toxæmia met with in the true gangrenous type. Seldom is a patient seen so utterly ill as in this condition; a persistent high temperature, rapid thready pulse, constant expectoration of nauseously offensive sputum, and a terrible depression of mind are the distinguishing features, although all our cases have had similar physical signs—viz., the abscess has been basal or posterior, the percussion note dull or tympanitic with marked bronchial breathing and absence of added sounds, the sputum particularly offensive, and of a typical green-brown appearance.

Bronchoscopy in Diagnosis

Bronchoscopic investigation is essential in every case and will reveal the position of abscess, the type, the presence of foreign body or growth (simple or malignant), and the presence of a pressure obstruction (not uncommon in upper lobe abscess) due to glands —tuberculous, malignant, or inflammatory. Absolute reliance cannot be placed on a *negative* X ray film, especially in any case clinically suggestive of abscess; and in this type of case simple lipiodol examination by any of the ordinary routes may be of no use, as it is recognised that lipiodol given this way seldom enters an abscess cavity owing to œdema of the mucous membrane of the bronchus of drainage. On several occasions with negative X ray findings bronchoscopy has shown us pus coming from one of the branch bronchi, and a bronchoscopic lipiodol has proved the presence of an abscess; this occurs especially in those cases which present in X ray antero-posterior view near the mediastinum or in relation to the diaphragm in a mesial position; the bronchus of drainage in these cases being the dorsal branch or the terminal internal and posterior branches of the lower lobe bronchus. If surgical intervention should become necessary the *exact* position of the abscess must be known. Those who have witnessed at operation a search for an imperfectly localised abscess and have seen the disappointing results from insufficient drainage will appreciate the difference when the abscess is accurately located, opened at the first incision and drained from the point of greatest advantage.

FIG. 1

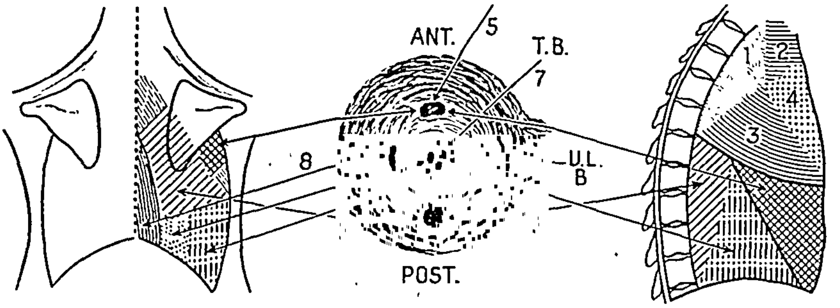

FIG. 2

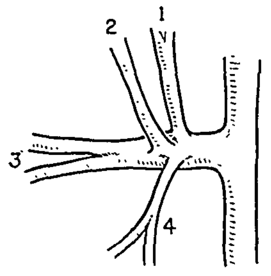

FIG. 1.—Diagram of bronchial tree viewed through bronchoscope. The numbers 1–4 relate to the upper lobe bronchus (U.L.B.) and are explained in Fig. 2. 5 = middle lobe bronchus. 6 = dorsal bronchus. 7 = terminal bronchi, going to lower lobe (anterior, posterior, and axillary). 8 = cardiac branch.

FIG. 2.—Upper lobe bronchus. 1 = posterior apical branch. 2 = anterior apical branch. 3 = transverse axillary branch. 4 = anterior pectoral branch. The numbers on the right of Fig. 1 indicate the corresponding areas of the lung.

Even if postural drainage is to be employed this cannot be efficient unless the bronchus which is draining the abscess has been determined. In many cases the abscess is not seen in the X ray as a definite cavity or, if seen, is surrounded by an area of pneumonitis or fluid which obscures the optimum point of attack. Physical examination and radiology alone cannot be depended on for accurate localisation, they only give a rough indication and, as mentioned above, may fail to disclose an abscess at all.

Topical diagnosis by means of the bronchoscope is done in two ways. First by careful search of the bronchial tree, noting the branch down which the pus is coming. (Reference to Figs. 1 and 2 will show the relationships of the branches to the pulmonary parenchyma.) Secondly, by injection of lipiodol up the branch from which the pus is coming, followed by radiography. The amount of lipiodol used must be judged on the suspected size of the cavity; overfilling is to be avoided, but a large gangrenous cavity needs a large amount to outline borders.

Radiograms must be taken antero-posterior, postero-anterior, and lateral, and upright as well as prone, for it is sometimes difficult to distinguish an alveolar filling from a cavity, and a fluid level seen in the upright is a great help in this differentiation. An important point is that bronchiectasis may be shown, precluding a cure by medical means. A thorough bronchoscopic search must be made, each bronchial branch being examined methodically with the telescope. No atropine should have been given before, as it may dry up the secretions so that no discharge may be seen.

If, for example, we take the right side, in the upper lobe bronchus the pectoral branches can be seen by slight movement of the head to the left, the transverse axillary branch by slightly more deflection, whilst the anterior and posterior ascending branches are shown by use of the retrograde telescope; thereafter search of middle, cardiac, and terminal lower lobe bronchi is easy. Overflow into lower bronchi may cause difficulty, but by cleaning out secretion and making patient cough the site can usually be ascertained.

Those cases with empyema and broncho-pleural fistula may give rise to some difficulty in differential diagnosis. When lipiodol is injected through the bronchoscope it sometimes happens that a small quantity enters the empyema cavity, clinching the diagnosis; in others the fact that the lipiodol in the lung fails to extend as far peripherally as the chest wall will suggest the presence of fluid. In two cases this has proved useful in diagnosis.

Therapeutic Bronchoscopy

We shall now consider whether bronchoscopy has a place in the treatment of pulmonary abscess. There can be no possible doubt that its value in diagnosis both as to the type and the position of abscess is so great that treatment without it cannot be justified.

Treatment must be considered both from the pathological and the anatomical standpoint, the areas affected to be taken in the following order.

Apical.	Upper lobe.
Peripheral.	In any lobe.
Mid zone.	
Hilus.	
Basal or diaphragmatic.	

There is a considerable difference of opinion as to the frequency with which an acute abscess clears up on medical treatment with postural drainage, figures varying from 10 to 60 per cent. In our first series the proportion of cases was 60 per cent., but in our latter series, however, it has been very small; the majority of our cases have a history of more than two months, and the fact that they are mainly segregated cases renders comparative figures unreliable.

Whatever the figure may really be—if only 40–50 per cent. of acute abscess or pneumonitis break down or become chronic—we should certainly try to prevent this happening. It has generally been advocated, and in the past we have supported this view, that an abscess or suspected abscess may be treated medically for two months before more active measures are taken. It would, however, seem *inadvisable and not in accordance with medical* teaching to wait for an abscess to form before starting treatment to abort it, which may in our opinion often be done.

We believe bronchoscopic drainage and instillation of Gomenol is often successful in causing resolution at this stage. To wait on an incipient abscess because it may resolve is to risk a large abscess occurring before it is realised; not uncommonly these are apical and difficult to treat. No harm can come of bronchoscopic treatment which, if successful, may save the patient a serious operation.

For effective bronchoscopic drainage a definite technique is required. The drainage-tube *must* be passed *up* the branch bronchus of drainage; it is often found that even so no pus can be evacuated. It is impossible to insert the ordinary drainage-tube more than 1 or 2 inches, with the result that when suction is applied the distal walls of the tube close and prevent aspiration (Fig. 3). With our operating bronchoscope we can introduce a catheter which will sometimes pass 4–5 inches up the branch bronchus, and can be seen radiographically entering the abscess cavity. The casual introduction of a drainage-tube is useless, except in cases in which there is a great possibility of the condition healing naturally.

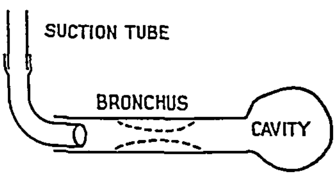

FIG. 3.—Diagram illustrating closure of bronchus by suction when ordinary drainage-tube is inserted.

For lavage and disinfection we have tried various substances—T.C.P., eusol, weak solution of novarsenobenzol, and a dye solution of acriflavine and gentian-violet as recommended by Kolmer. On the whole we have found our original preparation of 10 per cent. gomenol oil in olive oil or lipiodol with normal saline for lavage the most satisfactory. If the bronchus be obstructed by granulations or hæmorrhage is occurring, as is not uncommon in a healing abscess, silver nitrate solution is applied locally.

The necessity of early treatment in infective conditions to prevent serious consequences and the gangrenous type of infection is exemplified in infected foreign bodies, some of the worst cases being infected teeth lost down the trachea, pieces of tartar inhaled at operation, or peanuts. Very soon after inhalation infection spreads, and within a week two zones may usually be seen in a radiogram. A zone of collapse and external to this a zone of pneumonitis, the latter tends rapidly to break down and infect the collapsed area, and in consequence a large and usually gangrenous type of abscess is formed in a short period. A similar condition may also be seen in a bronchus obstructed by new growth.

CASE 1.—Sent to us a week after loss of tooth down bronchus followed by hectic temperature 24 hours later. Radiography: area of collapse and pneumonitis. Tooth removed, infected area swabbed with clove oil, immediate fall of temperature. Two days later following respiratory exercises to expand lung, the temperature rose to 101°, settling gradually within week. No further symptoms.

CASE 2.—Admitted three weeks after inhalation of tooth. This patient had a gangrenous abscess and died soon after admission, which emphasises the necessity of early treatment in all such cases.

The spirochætal gangrenous abscess or the pyogenic gangrenous type.—In these cases medical or bronchoscopic treatment is useless and dangerous because of the delay it causes. Bronchoscopy should be done once to fix the site of the abscess with lipiodol, and then again the day before operation to empty the cavity in an attempt to prevent post-operative inhalation of the abscess contents. This drainage often greatly improves the condition of the patient and the temperature may fall; but one must not be led astray by it, as this type of case can only be dealt with by surgical procedure, the rising pulse-rate usually indicates all is not well, and the operation should be done whilst the improvement is present.

We have had seven cases of this type: four acute gangrenous, two chronic gangrenous, and one pyogenic gangrenous. In 1 of the gangrenous cases the patient died within 48 hours of admission; 3 acute and 1 chronic were surgically drained soon after admission. All died. One chronic gangrenous of one year's duration had two bronchoscopic drainages with operation, and after progressing for six weeks died of hæmorrhage. The pyogenic case had a three months' history, was drained bronchoscopically three times, and operated on, the position of the abscess was exactly defined, and patient made a good recovery. Cases such as these must be treated surgically at the earliest possible moment to avoid their becoming chronic.

Simple pyogenic type.—In these cases bronchoscopic drainage will usually effect a cure. In the gangrenous type bronchoscopic drainage may be successful, the number of treatments necessary may vary from 2–3 in acute cases to 50–60 in chronic. On the whole the progress of cases with well-marked local reaction is better, despite the statement of some authors that after fibrosis has taken place open operation is the only treatment and the result of operation is rendered less favourable. When there is no localising reaction and the condition appears to be spreading, as seen radiologically, even although drainage may be adequate and the temperature has fallen, a rising pulse-rate is an indication for considering surgical treatment.

The necessity for absolute rest, and sanatorium régime for these patients, whether under postural or bronchoscopic drainage, cannot be overstressed. After a few bronchoscopies the patient usually feels well; temperature and pulse are normal, weight is gained, and sputum reduced to little or none. But the cavity is still patent though clean, and if the patient is allowed to go out of hospital there is usually a recrudescence. The warning does not apply to the patient with chronic abscess, refusing surgery, in whom drainage is being conducted as a palliative measure.

The mere fact of recurrence in a "cured" case does not negative further bronchoscopic treatment.

CASE 3.—Large abscess of some months' duration. Five bronchoscopies; healed. A year later relapse; abscess same size. Three bronchoscopies; healed and has remained well (26 months) up to date.

It is important that the benefit from bronchoscopy should not blind one to the fact that in chronic cases complications may occur, such as bronchiectasis associated with the abscess, and the patient may be cured of his abscess and left with bronchiectasis. Enthusiasm must be tempered with judgment. That the patient with chronic abscess with bronchiectasis can be kept fairly well by this means is proved by five patients with bronchiectatic abscesses who do their work and have had occasional lavage for four years and refuse any other treatment.

In those cases of new growth simple or malignant complicated by abscess the condition of the patient may be much improved and rendered more comfortable by drainage and insertion of radon to render the bronchus permeable. A man has attended our clinic for three years with a recurrent (? simple) growth of left upper lobe whose abscess was cured in this way. We have used radon and drainage with success in this way not only in malignant cases who have an abscess but as a prophylactic in cases without abscess in whom there is no hope of permanent cure.

These principles in the treatment of abscess must be modified according to its situation. The apical upper lobe abscess is unfortunately fairly common and though the condition of the patient may not be so bad if drainage is free, the prognosis is not so good owing to difficulties of drainage both bronchoscopically and surgically. Bronchoscopically it is difficult to drain on account of the mechanical problem of getting a drainage-tube up the branch bronchi, as may be seen by the diagram (Fig. 2). This can be achieved by means of a curved steel spring stilette in a gum-elastic catheter and the operating bronchoscope, but is not easy. Surgically they present difficulties of approach.

Owing to the rigidity of the upper part of the chest and the smaller amount of surrounding lung tissue it has not the same opportunity of compression by healthy lung as those lower down. Despite these difficulties they may sometimes clean up in a surprising manner.

CASE 4.—Five months' history. Right upper lobe abscess size of golf ball with well-marked wall. Completely healed after four bronchoscopic drainages.

CASE 5.—Right upper lobe; four months' history; good progress after ten bronchoscopies, but wanted operation. Open drainage. Recurrence after six months, now again on bronchoscopic drainage. Condition good but abscess still patent.

CASE 6.—Right upper lobe; one year's history during which abscess had appeared to heal on medical treatment. Recurrence. Two bronchoscopic treatments followed by rapid healing.

Peripheral type.—By this is meant abscesses in close proximity to the pleura in any lobe. The chance of infection of the pleura causing a local empyema or rupture of the abscess with infection of the whole pleura is very real. Attempts to collapse with artificial pneumothorax, done in error, owing to the abscess being mistaken for a tuberculous infiltration, cause infection of the whole pleura.

CASE 7.—Was admitted to sanatorium with what was supposed to be an early apical lesion. Artificial pneumothorax was induced and followed by hectic temperature. It was realised that an abscess had been collapsed and patient was admitted to Victoria Park Hospital. A free empyema was drained and after several months' severe illness patient made a good recovery.

Mid-zone abscesses in the middle third of lung field are in communication with larger bronchi and are very suitable for bronchoscopic drainage. There is little fear of infection of pleura and there is plenty of adjacent lung tissue to help close the cavity.

Hilus region.—These are even more accessible to bronchoscopic treatment. This is the type of case in which artificial pneumothorax has been specially recommended, but it is hard to collapse a tuberculous cavity in this situation and to obtain complete collapse in abscess is still more difficult.

CASE 8.—Four years ago an abscess at right root which lipiodol would not enter. Treated for two years with artificial pneumothorax, during which time patient very ill though about. A.P. stopped two years ago; lung now out. Cavity still present; lipiodol enters. Patient in good health but a dry cavity is still present. We agree with Kindberg and Monod, who state that if A.P. is done it may have to be continued indefinitely.

Basal type.—These are often as difficult to treat as to diagnose; they are often inaccessible to surgery and may be mistaken for subphrenic abscess as they are often accompanied by elevation of the diaphragm. Bronchoscopic drainage is the best method of treatment.

CASE 9.—Seen four years ago with a 16 months' history. He was surgically explored and nothing found; phrenic avulsion and A.P. were both of no avail. A bronchoscopic lipiodol showed a cavity in angle of diaphragm and mediastinum. This patient had about 30 bronchoscopies and has now been well for two years.

CASE 10.—Appendicectomy in a general hospital followed by fever and pain low on right side with elevation of diaphragm. Subphrenic abscess suspected; needling negative. Temperature settled and he left hospital. Within a week had an hæmoptysis and was admitted to Victoria Park Hospital. Bronchoscopic lipiodol showed abscess right base. Treated by bronchoscopic drainage and sent to convalescent home; returned with pleural involvement; open operation confirmed lung abscess. Cure.

Surgical Measures

Failing bronchoscopic drainage we have to consider the other methods available for those cases which have not cleared up with medical treatment.

The high operative death-rate in primary operation is serious and a risk the physician is disinclined to take unless it be absolutely necessary. We feel, however, *that if the patient be adequately prepared* for the surgeon by drainage, localisation, &c., and be operated on at the most suitable time the results might be very much improved, and our cases referred to surgeon show this. The most suitable cases for surgery *are those in which the bronchus of drainage* is the dorsal branch of the lower lobe bronchus whose area of supply is posterior and below scapula.

In cases which have been submitted to open operation the bronchoscope is useful as a means of washing out the infected zone from above; this may be continued by instillation with gomenol through a laryngeal catheter.

CASE 11.—Post-tonsillectomy abscess of one year's duration. Bronchoscopic drainage rapid improvement. After some months, ill-advisedly sent for a change, came back much worse. Operation advised. First operation unsatisfactory. Second operation modified cautery lobectomy. Condition continued bad till washing from above was employed, after this rapid improvement and patient has now left hospital on occasional lavage, with very slight discharge of sputum.

The above remarks apply to incision of abscess; the figures for lobectomy in this complaint have been too bad for serious consideration in the past, but with improving surgical technique in this direction it is possible that in the near future this will be considered the best treatment for lower or middle lobe abscess complicated with a residual bronchiectasis.

Phrenic avulsion.—Sporadic and isolated reports on the cure of lung abscess by this means appear from time to time, and it is suggested that it helps by completing drainage when this is free. We have, however, to face the fact that drainage usually is not so free after this operation owing to kinking of the bronchus. Therefore we do not use it, nevertheless we agree that it may have a definite use if bronchoscopic drainage is continued after the operation has been done, but probably a phrenic crush is more advisable than avulsion of the nerve; this was brought to our observation by two cases of abscess which were referred to us after phrenic avulsion had been performed at a general hospital. After the operation both patients had become much worse, but both were treated with regular bronchoscopic drainage and although one of them had more than one abscess they rapidly improved, healed, and have remained at work for three years.

Encouraged by these results we tried phrenic avulsion on a case of lung abscess, healed by bronchoscopic drainage, which had a residual bronchiectasis which was not improving on the treatment. After the operation he was allowed to go home and went steadily downhill, lost 2 st. in weight, and was spitting 15 oz. a day. However, on the resumption of bronchoscopic drainage in hospital he rapidly gained more weight than he had lost and sputum was reduced to a trace.

Plastic operations on the chest wall are much the same in their result as phrenic avulsion and we now never advise them.

Artificial pneumothorax.—In the majority of cases to induce a pneumothorax means the production of an unlocalised empyema, and the feeling in this country is adverse to this, except possibly in the hilus case, to which we have mentioned an objection above. Nevertheless certain continental authorities have suggested producing an empyema in this way as a means of a cure.

We are bound to say that in those cases in which this complication has arisen—whether the artificial pneumothorax and empyema has been produced advisedly, in error (as in the case quoted above), or as a sequel to bronchoscopic treatment—the ultimate result has usually been cure of the abscess. The patient, however, has such a stormy passage and often seems so near death that one hesitates to initiate the condition. Moreover we have found that empyema secondary to bronchoscopic treatment tends to be circumscribed and of better prognosis; and we do not regard it as a much-to-be-regretted complication.

Results

Of the 55 cases, 8 were admitted in a condition in which no treatment could avail. The duration of the disease was mostly over three months, the shortest being three weeks and the longest one year. Palliative operations were undertaken in some of these cases, but for obvious reasons they are not included in surgical results.

Of the remaining 47 cases, 2 were submitted to immediate operation. A woman who had refused all treatment for a year was admitted with a secondary empyema which was drained. She recovered from the operation but died later of cerebral embolism. Recovery took place in one case of pyogenic gangrenous type, with a three-months' history, treated by lobotomy. The remaining 45 cases were considered suitable for bronchoscopic treatment. The five youngest were aged 4, 6, 7, 13, 14, and all of these recovered. Three (6·6 per cent.) died whilst under treatment. One who had been making good progress was allowed to go out, lived unreasonably for six weeks, and came back with the lung in a gangrenous condition. One died of cerebral abscess. One outpatient said to have died of influenzal pneumonia, but probably a septic pneumonitis. Seven (15·5 per cent.) were referred for surgical treatment; 4 had lobotomy and of them 1 died, while 3 with secondary empyema recovered. The lobotomy death was that of a patient discharged a year previously apparently cured, who had a baby after discharge; she then had an attack of influenza and a light-up, but she did not return for six months. Death from hæmorrhage took place at the commencement of operation.

To sum up, there were 2 surgical deaths in 9 cases, and the total of deaths in the clinic was 5 (11 per cent.). For the surgical results in those cases in which *surgery became necessary we have to record our* thanks to Mr. W. H. C. Romanis, Mr. R. H. O. B. Robinson, and Mr. T. Holmes Sellors.

Conclusion

Hitherto the bronchoscope as an accessory in the treatment of lung abscess has not received its due in this country. The reason is not far to seek. The physician, who has the greatest interest in following these cases medically, has not had so far any experience with this instrument; the laryngologist has slight acquaintance with the lungs and no opportunity of following the disease, whilst the surgeon tends to prefer the knife. This is not surprising considering that our work has entailed 2000 bronchoscopies in the last four years.

We should lay it down as a dictum that every case of lung abscess should be watched and treated bronchoscopically so that if necessary operation may be undertaken at the optimum period. Each case must be considered with an open mind and enthusiasm for this method must not allow one to continue when experience has shown that open operation is desirable.

STRICTURE OF THE EXTERNAL URINARY MEATUS

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An abnormally small external meatus is not uncommon, and I have, in my hospital notes, records of 70 cases of this nature. All these cases belong to the male sex and, although a similar condition is found in the female, I have not included in this series any cases occurring in women. By stricture is meant a narrowing of the external meatus, and such narrowings are well known to occur with hypospadias, and pinhole meatus, but with these two conditions the present paper is not concerned.

The causes acting in the production of a meatal stricture are fairly numerous. In the present series there are 33 patients of fifty-one years and over, and 32 between the ages of twenty-one and fifty, which indicates that this form of stricture commonly affects elderly and old men. In this connexion it cannot be doubted that the change in the condition of the penis in later life is to be taken into account. Thus the penis becomes smaller in middle and old age, and so the prepuce comes to cover the glans more completely than in younger people. In addition, the more prominent abdomen prevents the penis being seen, and it is less frequently washed than it used to be. Smegma is collected under the foreskin, and its retention may lead to considerable irritation; and as such a collection must be associated with the presence of organisms, inflammation may be produced, and fibrosis occur as a consequence. This fibrous tissue is developed under the mucous membrane near the meatus, which it throws into wrinkles, and so the meatus, instead of being a longitudinal slit with bilateral plaques, as it usually is, becomes circular and star-shaped.

The mucous membrane in chronic cases looks dry and scaly, but in recent cases the glans and meatus may appear "weepy." Both appearances are quite characteristic, and unlike gleet, the weepiness comes from the surface, not the inside of the urethra. The stricture is rarely as long as half an inch, and is often shorter. I have, however, notes of a case in which the stricture extended three or four inches up the urethra from the meatus.

The condition is one for which it is not difficult to indicate the treatment, but some cases are not so satisfactory as others in responding to treatment. Some seem to be cured, whilst others go on for a long time without showing a cure, though they may be much improved. Such strictures may produce precisely similar results as stricture occurring elsewhere, whether gonorrhœal or traumatic. Thus local perineal abscess may occur, also cystitis and stone in the bladder, ascending lymphatic infection leading to perinephritis, and septic nephritis. Meatal stricture must never be overlooked in connexion with the diagnosis of urinary obstruction and, indeed, it may be additional to the common causes of obstruction such as enlarged prostate or urethral stricture. The strictured area of the meatus may be very painful and tender, and the greatest tact and caution should be used even when a very small instrument is being used; we should always recollect that the meatal region is the sense organ of the bladder, and is the locality where the desire to micturate is felt. This tenderness and pain may be very conspicuous.

As meatal stricture occurs so often in old people it may be suggested here that such people should roll back the prepuce once a week and wash the glans and corona with warm water and soap; but some force is needed to get the smegma off the glans and away from the folds of the rolled back prepuce. The prepuce should always be replaced in position after such a washing.

The causes of the condition of meatal stricture may now be considered more fully. It is a little difficult to isolate the cause in a few of the cases, but generally speaking, the cases may be classified as follows: meatitis with advancing age; meatitis with or without phimosis in younger people; gonorrhœa; syphilis; after circumcision.

Meatitis with Advancing Age

The possible pathology of this condition has already been mentioned, but some of the cases give a history of gonorrhœa, and others have undoubtedly had this trouble, so that in certain cases gonorrhœa cannot be excluded as a possible cause, even in old people. The conditions which have already been described were present in all the types of stricture at present under consideration. The first case in my notes illustrates this point.

CASE 1.—Male, aged 70, had frequency and difficulty in completing the act of micturition. No appetite and great thirst; frequency of micturition at night. Gonorrhœa twice about fifty years ago. A stricture in the usual region manifested itself ten years later. The patient also had an enlarged prostate, and a definite stricture at the meatus, and at the first attendance no instruments were passed, owing to the difficulty of introducing even a small one, but when he next came a coudé catheter No. 8 was passed with some difficulty. A fortnight after this the patient reported that he was very much improved and was passing his water well. He was given malt and belladonna, and reported well a week later.

In this case the meatal stricture may have been gonorrhœal, and it certainly seems to have contributed to the urinary difficulties of which the patient complained. In the next case the stricture at the meatus was unaccompanied by any history of venereal disease, or evidence of another stricture, nor was there an enlarged prostate.

CASE 2.—Male, aged 61, complained of painful and difficult micturition. The pain was referred to the end of the penis. He was a long time in passing water, and it practically only dribbled. A meatal stricture was present, and only admitted a small probe. The stricture was dilated gradually and three weeks after the first attendance a metal bougie (No. 18/22 French size) could be passed easily. Yellow oxide of mercury ointment was used as a local application. Green iodide pills were also administered, not beause the case was considered to be one of syphilis, but because of the well-known antifibrotic effect of mercury and the iodides. The patient said he felt very well after this treatment, and at the end of two months was discharged with no sign of stricture.

It is recognised that hypospadias may be associated with a small opening, which though small has, as a rule, a perfectly healthy appearance, but in the succeeding case of hypospadias there may have been a good deal of fibrous tissue formed as a result of chronic irritation and inflammation.

CASE 3.—Male, aged 70, was admitted to out-patients with difficulty in micturition which had culminated quite recently in retention. A meatal opening was found after some difficulty, owing to the formation of scales and debris round the orifice due to chronic inflammation. The stricture was rapidly dilated up to No. 18/22 (French size) metal bougie. A fortnight after this it was noted that there was a hypospadias, and my house surgeon at the time, Mr. Le Vieux, now of Mauritius, slit the opening on its ventral aspect. I am not sure that I agree with this method of treatment, but the patient did very well and reported seven months later able to pass his water satisfactorily.

Attention has already been drawn to the value of mercury and iodides when accompanied with instrumentation, but in many cases the use of strychnine and digitalis will do much good as in the following case.

CASE 4.—Male, aged 70. He was said to have an enlarged prostate, but I could not agree with the diagnosis wholly. The meatus was very small, and he was using a catheter himself, as he could not pass any water without its aid. There was a thin purulent discharge from the meatus. It was not reported that there were gonococci in the specimen sent for examination, and the discharge itself was hardly of the character that one associates with gonorrhœa in old men. In my experience when old men get gonorrhœa they get it very badly. He was advised to continue his catheterisation as he lived in a distant part of Kent, and could not come regularly to the hospital. He was given liquor strychnine ♏ 2 and tincture of digitalis ♏ 2 three times a day before meals. Three months later he was seen in the genito-urinary department at Guy's Hospital, when he reported very well generally and locally.

I believe that these two drugs, by stimulating the bladder muscle, enable that organ to get rid of all its contents, which must allay the irritation due to stagnation of the urine in the bladder; but they must not be given unless the obstruction is overcome with instrumentation. I have found these two drugs most useful in similar cases.

Including these 2 cases, I have 18 cases of similar strictures occurring at the meatus, and associated with the conditions already described—viz., a diminishing penis, a lengthening of the prepuce, retention of smegma, and chronic irritation leading to fibrosis and the formation of a stricture at the meatus. The ages at which this condition manifested itself were 54, 55, 61, 66, 66, 69, 70, 70, 70, 71, 71, 72, 74 and 78, the average being 67. Clearly in some of these cases circumcision will do good, as in the following:—

CASE 5.—A male, aged 69, had phimosis with a meatal stricture. Circumcision was performed and the stricture was dilated. There was a completely successful result with which the patient expressed himself very pleased, though he had demurred when operation was suggested.

CASE 6.—Male, aged 71. There was eighteen months' history of difficulty in micturition in the standing position, but there was no difficulty when he was sitting down. (This sort of symptom is always worth noting, but I do not, at present, understand its significance.) Pain at the end of the penis occurred at the termination of micturition. Under the prepuce a good deal of thickening could be felt, but owing to the fibrosis the foreskin could not be retracted, and it was suggested that there might be a cancer. He was admitted into the hospital and circumcision was performed; no cancer was found, but there was much fibrosis round a small meatus, and after some difficulty a No. 6 (English) olive-headed catheter was introduced. This was not retained in position. Gradual dilatation followed and four months later No. 11 (English) catheter could be passed easily.

Sometimes the preputial orifice is so tight that urine may be collected between the prepuce and glans. If this happens it may produce a swelling which may be quite alarming to those who have not had much experience in these cases. The following history illustrates this.

CASE 7.—Male, aged 66, came to out-patients with a red irritating patch on the under surface of the glans. There was a history of one month's duration, and the foreskin was tight, and the glans harder than usual. There were a few enlarged glands in the inguinal regions. Circumcision was performed, and the patient did extremely well after the wound had healed and dilatation of the meatus had been performed. At the end of six months he was discharged. There was definite evidence that drops of urine had collected in this region, and perhaps had led to the redness and irritation. A similar case will be related later.

To make this series of cases more complete a case will now be quoted in which a meatal stricture may have been responsible for a fatal termination, with the common condition of ascending nephritis.

CASE 8.—Male, aged 71, with meatal stricture. He was recorded as a patient who would in all probability give little or no help to the surgeon, and when a student notices this kind of mental temperament it usually means that the patient is uræmic. The stricture was dilated, but his condition was so poor that he died in 12 days, having developed parotitis on both sides. At the autopsy it was found that he had a prostatic abscess, and pyelonephritis.

Of course everyone knows that prostatic abscess as a rule gives rise to urgent symptoms such as great pain and tenderness with pyrexia, but I have had three cases in which it did not do so, and they all died with septic nephritis. In this case the abscess in the prostate may have led to the ascending condition, and the meatal stricture may have had very little to do with it.

Meatal Stricture in Younger People

I now have a series of cases occurring at a younger age, in which there was little evidence of an acquired phimosis. The meatus was perfectly visible, but there certainly was a fibrotic condition of the meatus with a stricture. The first case is interesting in that a long after-history is known, and a possible cause can be assigned for the stricture. It is interesting also because a definite cure has been effected.

CASE 9.—Male, aged 44, was admitted to out-patients in August, 1919. He gave a history of a symptom which is very common—viz., dysuria at the beginning of the day, the flow becoming better during the day. He was treated with medicines, and omitted to attend till February, 1921. He then said he had passed two small stones per urethram, but there was no history indicating from which kidney they had come. He had a weeping meatus of a circular star shape, and a tight meatal stricture. The mucous membrane was puckered and thrown into folds, thus producing the star-shaped meatus. He had had both syphilis and gonorrhœa 30 years previously, and a strong positive Wassermann reaction was given. There was also a positive Kahn's reaction, but no other evidence of syphilis. Nor were there any signs of a chancre. There was no sign of any other stricture to indicate that the meatal stricture might have been gonorrhœal. If neither syphilis nor gonorrhœa had caused the stricture, it was possible that the passage of the stones, which was attended with some difficulty, might have started the process. At one time streptococci were found in the slight discharge from the meatus.

The patient was most regular in his attendance, and in nine months' time, after gradual and continued dilatation very gently performed, there was very little fibrosis round the meatus which resumed its normal shape and appearance. Later he was cured completely, but continued to attend as he developed neurasthenia. He is still coming to out-patients, after 13 years, and is a useful demonstration of a cured meatal stricture.

A second case may now be recorded, who has been attending for a long time, and even now can hardly be said to be "out of the wood."

CASE 10.—Male, aged 19. He came up first in May, 1929. He is an intelligent youth, and gave a history of dysuria for seven years. This commenced at the age of 12, a little young for a gonorrhœal stricture to develop. He had been dilated by a private doctor, and when he came first was using an instrument upon himself for the purpose of keeping the meatus open. The condition had improved slightly, but on the night before admission he could not pass the instrument. In accordance with my practice of never doing too much with a young man on his first appearance, he was given mercury and potassium iodide, and four days later an olive-headed bougie (No. 3 English) was passed. As the urethra was very tender, not much progress could be made. The patient was given hyoscyamus and buchu with an alkali, and at the beginning of July (six weeks after admission) a No. 6 olive-headed bougie was passed. Yellow oxide of mercury was used for lubrication of the instrument. There was still much pain and tenderness.

At the end of July he was admitted to hospital. The urethra was opened in the perineum, and the bladder was drained through the wound with a catheter "en demeure." After the wound had begun to granulate a laminaria tent was introduced into the meatus. On discharge there was a small fistula, which healed up very quickly, and this fact suggested that there was less obstruction at the meatus. The meatus remained large, but was not normal in appearance as in Case 9. It was patulous and circular, and appeared as though it were passive. The patient developed epididymitis, and this prevented dilatation being done as adequately as it might have been. Assiduous attention prevented the epididymitis going on to suppuration, and on Oct. 29th, 1929, Nos. 10, 11, and 12 (English) olive-headed bougies could be passed, though the last was very tight and caused a little bleeding. At the end of 1929 he was having a metal bougie (18/22 French) passed. After this he came regularly every fortnight, and an 18/22 metal bougie was passed every time. The pain was always great when an instrument was passed. The inside of the meatus was puckered and white as late as November, 1932. It is stated that the meatus was then dry, though it had been weeping before.

In this case I was never convinced that mercury and potassium iodide did any good in the way of relieving pain. The patient continued to attend, and at the end of 1934 internal urethrotomy was performed. He is certainly better, there is not so much pain, and the meatus is large, but there is still some fibrosis round it. This type of case is very difficult in its pathology and treatment.

The average age of this condition of meatitis without phimosis is thirty-one; the number of cases is 8, the youngest being nineteen and the oldest forty-three, so that the age is younger than that of the usual type of gonorrhœal stricture.

Meatal Stricture due to Gonorrhœa

The cases which are probably gonorrhœal in origin are more numerous and usually respond well to treatment. They are attributed to gonorrhœa because they all had a definite history of infection, and in many there was a definite stricture in the usual position of a gonorrhœal stricture; moreover, the ages of the patients were the usual age for gonorrhœal stricture. The cases number 17. The average age is forty-eight, the youngest being thirty and the oldest seventy-four. The first illustrative case is as follows:—

Case 11.—Male, aged 46. There were two strictures including the meatal one, and the history was complicated by attacks of malaria, and "influenza." The patient was said to have had eight attacks of the latter disease recently, but I have learnt to discount this diagnosis when urinary troubles are found; for example, cystitis may begin with general symptoms of fever and malaise, and any frequency is often considered part of the general illness. The patient had had gonorrhœa twenty-one years previous to admission. There was a stricture six inches up the urethra, and also a meatal stricture, with the note that there was an "india-rubbery" feeling of thickening round the meatus of one quarter of an inch long. This extended all round the meatus, and it was firm enough to prevent proper manœuvering with a metal instrument. A No. 1 (English) olive-headed bougie, "en baionette," was passed and tied in. In a patient with a history such as has been recorded the smaller the instrument which is passed the better for the patient, provided the route has been properly secured. This instrument was succeeded by a No. 5 (English) bougie at the end of three days, and later gradual dilatation was performed. During the succeeding eight months a No. 18/22 (French) metal bougie was passed regularly every fortnight.

This case is quoted, not because it is suggested that the meatal stricture was the great cause of difficulty, but because the stricture higher up was undoubtedly gonorrhœal, and for this reason the meatal stricture may be held to have a similar origin. The limitation of manœuvering with a metal instrument when there is a meatal stricture is important. Forcing of a meatal stricture causes much pain and may lead to spasm in the deeper parts, thus producing shock and faintness. Such a method of treatment should never be adopted even under an anæsthetic.

Two other cases may be recorded.

Case 12.—A male, aged 34, who probably had a gonorrhœal stricture in the region of the bulb, and also had a meatal stricture. The stricture was subjected to internal urethrotomy in hospital, and a few days after the operation a laminaria tent was used to dilate the meatal stricture. The patient responded to treatment very well and at the present time, five years after his admission, attends regularly, and a metal bougie (No. 18/22 (French) is passed every time.

Case 13.—A male, aged 54, had gonorrhœa at the age of 18, and had a stricture dilated at the Westminster Hospital. Later he came to see me at Guy's Hospital and undoubtedly had a stricture deep in the urethra; but the main difficulty lay at the meatus. The stricture at the meatus was dilated, and the patient attended for six years, a No. 18/22 (French) bougie being passed regularly and easily.

From my notes it would appear that these gonorrhœal strictures at the meatus give rise more frequently to incontinence and dribbling than to retention, although in cases of congenital pinhole meatus such an event is not uncommon.

Syphilitic Stricture of the Meatus

The next cause of meatal stricture is syphilis. The stricture is caused by a chancre which occurs at the meatus, probably complicated by sepsis, for a chancre elsewhere on the glans is not, in my experience, associated with much formation of fibrous tissue, though the old scar may be easily visible. But a chancre situated away from the meatus will not be subjected to the stream of passing urine. I have notes of 14 cases. The average age is forty-seven, the youngest being twenty-one and the oldest seventy-two. This age incidence is very much the same as that of gonorrhœal meatal strictures, and both differ markedly from that of the first class which, as we have seen, occurs in elderly and old men. Occasionally a chancre itself, whilst it is still active, will give rise to obstruction, but this is probably due to the temporary adhesion of opposed parts with dried serum, and debris.

Case 14.—Male, aged 28, came to out-patients with a history that for two days he had been unable to pass water. He not only had the sensation that there was something stopping the flow, but the tenderness was so great that he was also afraid to pass it. It is interesting to note that I recorded that the patient felt as though he had influenza, which is very significant in connexion with my previous remarks anent the diagnosis of influenza in what are really urinary cases.

The next case appears to show that the healing or partial healing of a chancre may lead to stricture very rapidly.

Case 15.—A male, aged 33, contracted syphilis, and on his admission stated that he had had a sore on the penis for a fortnight. The glans was œdematous, and it was noted that there were "bands on the glans." The meatus was minute, and only admitted with difficulty a No. 3 (English) olive-headed bougie. Novocain was applied, and the meatus slit on its ventral aspect. There was no other stricture. Appropriate remedies were prescribed in the way of drugs, and the patient was very much better when he ceased attending.

Case 16 is that of a male aged 35 who contracted syphilis at the age of 22, and was treated for chancre at the Lock Hospital. He had had four attacks of gonorrhœa, and there was a stricture in the region of the bulb. I very rarely come across cases of double stricture inside the urethra, so that the note that there were two strictures within three inches of the meatus was of importance, as the meatal stricture was associated with the presence of the scar of the old chancre. The presence of "bands" on the meatus had been noted already, and in one case it is reported that there is some growth of the mucous membrane over the meatus.

Case 17.—In this case the prepuce had become adherent over the glans, and offered so much obstruction to the passage of urine which had collected under it, that it had to be incised as the house surgeon was afraid of extravasation. There was also evidence of bladder retention, and such a stricture may lead to cystitis. Perhaps a little unlike the other cases of metal stricture, these meatal strictures due to chancre may be accompanied by retention of urine. This patient had been admitted to another hospital for retention, where nothing was done in the way of instrumentation, but the retention was apparently overcome by drugs and rest. He came to Guy's Hospital after his discharge from the other hospital, and the meatal stricture was gradually and continuously dilated. He was discharged able to pass his water well.

Healed chancres appear to cause worse strictures at the meatus than any other form of stricture there. One very bad case was the following :—

CASE 18.—A male, aged 72, was in a miserable condition with retention and overflow owing to fibrosis following the healing of a meatal chancre, to which caustic silver had been applied.

Another characteristic of these syphilitic strictures which are due to a chancre is the very great pain that accompanies them. In my notes frequent reference is made to this symptom, but fortunately mercury locally and by mouth affords one most efficient means of relieving it. I am not sure that mercury does much good in the other classes of meatal stricture, though I have seen it useful. It may be that this pain is an important factor in the production of retention, to which attention has been drawn.

Meatal Stricture following Circumcision

Finally, as cause of meatal stricture the operation of circumcision must be held responsible. I have in my notes reports of 4 such cases. I do not think that the operation had been badly performed, and perhaps the wound had become septic, but in two of the cases it is not possible to reject actual damage to the meatus as the chief cause. Careful attention by the operator should be paid to the actual locality of the meatus, and the glans under the foreskin which is being removed. Potassium bromide, grs. 5 every four hours, should be given to those who are beyond childhood before and after operation. A very light diet, and the prohibition of visitors of either sex for two or three days after the operation, would probably reduce even the small number of meatal strictures following circumcision. The age of all these 4 patients is just under nineteen, so that they are much younger than any of the other series of cases.

Conclusions

(1) Acquired strictures of the external urinary meatus are not rare. (2) They occur relatively frequently in old men, and may then be associated with a progressive phimosis, due to the diminution in size of the penis, the absence of proper cleanliness, and the collection of smegma. (3) In younger people chronic meatitis may occur with or without phimosis. This condition may lead to rather obstinate strictures. (4) Gonorrhœa occasionally produces meatal strictures. (5) Chancre may lead to a very painful form of stricture, and retention seems to be more common with chancre than with any other of the causes related here. (6) Stricture of the meatus occurs rarely after circumcision. (7) Stricture at the meatus yields, after a varying period of time, to instrumentation and the use of suitable drugs.

BRISTOL HOMŒOPATHIC HOSPITAL.—Mr. W. Melville Wills has given £10,000 to this hospital of which he is president. Mr. Wills bought the site and built the institution at a cost of nearly £150,000 as a memorial to his son. His donations now total about £180,000 towards capital endowments and expenditure, and he has given some £74,000 towards maintenance.

THE DIAGNOSIS OF ABNORMAL HIP CONDITIONS IN CHILDREN

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IT is a sound axiom that we shall never diagnose the presence of any condition of even moderate rarity unless we bear its possibility constantly in mind while we examine our patients ; also we shall make many unnecessary errors if we do not use a systematised scheme of examination. In preparing this paper I have attempted to meet these two requirements by making rough sketches of the pathological conditions which we are likely to meet in the hips of children, as demonstrated by X rays, and by reviewing the significance of the symptoms and signs which appear on routine clinical examination.

The Conditions Encountered

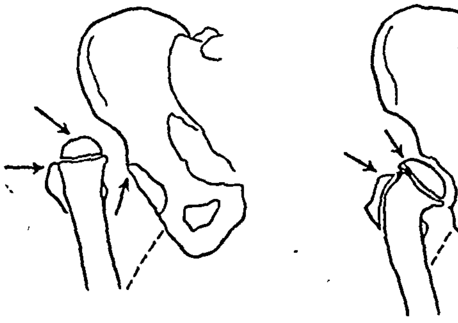
1. *Congenital dislocation of the hip* is really a faulty development of all the structures of the hip-joint, bones, cartilage, ligaments, and muscles, and is present at birth, though rarely recognised so early as is desirable. The radiographic diagnosis depends on noting whether the whole of the femoral head lies below the Y (triradiate) cartilage (Fig. 1).

2. *Rickety coxa vara*—i.e., bending of the neck of the femur and irregularity of the upper epiphysis—develops in early infancy, but the deformity may not be noted until, and may increase after, walking (Fig. 2). The most extreme deformation occurs when the condition is complicated by *congenital syphilis.*

3. *Coxa plana* is a lesion of the epiphyses of both femur and pelvis, thereby indirectly deforming the hip-joint (Fig. 3). It occurs from about the sixth year onward, but often is not recognised till several years from its onset, whose date is hard to determine, because different cases progress at very varied rates, while the early symptoms are vague. As the initial deformity tends slowly to increase, cases are sometimes first brought for treatment during puberty. If they are brought at the onset, the X ray signs may be entirely absent and the diagnosis is only clear after some months, when the radiogram is apt to demonstrate changes occurring in the course of the most thorough treatment. The condition was described almost simultaneously by Calvé, Legg, and Perthes, whose names have been attached to it, while the earliest description by Waldenström of Stockholm is overlooked, because he called it tuberculous ; yet double cases may have one side become tuberculous, and cases of undoubted tuberculosis may end with X ray appearances indistinguishable from it. In other words, its primary cause is still undiscovered and may not be a single factor. The characteristic features are flattening of the femoral head, preceded by " fragmentation " of its structure and followed by shortening of the neck and opening-out of the acetabulum.

4. *Slipping of the upper epiphysis* of the femur (or rather of the shaft upward on the neck) usually develops during adolescence, especially in the flabby, over-weight child, whose appearance suggests endocrine disturbance, who may have lowered sugar tolerance, partial gigantism, and weakening of other bones, such as the tibia and femur at the knee, giving severe knocking. The head for a time keeps its

normal shape and situation; the neck slips upward (Fig. 4). The infantile type of slipped epiphysis is usually overlooked till puberty, when increase of height and weight make conspicuous the mechanical strain on the hip-muscles by producing a waddling gait. The deformity is a great exaggeration of the slipping that first occurs at puberty; it has been described in infants, and I have seen a severe case in a child five years old, in which the condition was irreducible by manipulation.

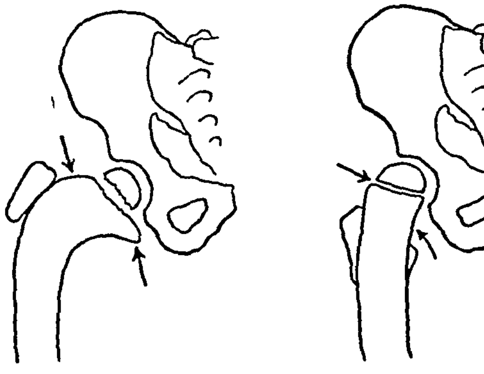


Dislocation (with coxa valga). *Subluxation* (with coxa vara).

FIG. 1.—Dislocation and subluxation.

5. *Coxa valga*—i.e., overgrowth of the neck of the femur with loss of the normal angle, so that neck and shaft run almost in one line—may be a result of infantile rickets, or develop as a growth abnormality in tall children (Fig. 2).

6. *Tuberculosis of the hip* (or neighbouring bones) has been left thus far on the list, because, though it is usually the first diagnosis made in a child that complains of the hip region, it is, in the area where I practise, one of the rarer causes. This is fortunate, because its treatment is infinitely tedious, even in early cases, and its result in the best hands is nearly always a stiff hip. Fig. 5 is a composite picture of three early types, which, as shown by the drawing on the right, are nearly always combined in the late stages. There may be a focus in the under surface of the neck of the femur, or in the roof of the acetabulum, both extra-articular at the start, or a pure synovial lesion. Each of these may and usually does spread to neighbouring parts and all that treatment can do is to limit the spread by reduction of strain and by stimulating a layer of calcification to form a limiting barrier all round.



Coxa vara. Coxa valga.

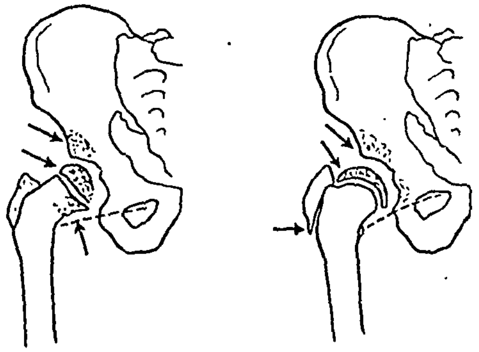
FIG. 2.—Coxa vara and valga due to rickets.

7. *Non-tuberculous arthritis* of the hip is of many types. The rheumatoid type, like Still's disease, seldom seems to begin in a single hip, but is usually symmetrical and usually is first noticed in the knees and ankles, though the hips may be affected simultaneously. There is a syphilitic type in which the metaphyses, and, or epiphyses, are diseased as well as the joints. It is the X ray appearances and other clinical signs such as depressed bridge of the nose which are characteristic.

Arthritis of true rheumatic origin, less acute than rheumatic fever and another of quite unknown origin, are probably the commonest causes of hip symptoms in children. As they clear up after recumbency for a few weeks or months and leave no radiographic traces of their presence, it is hard to gain knowledge of the causes. It is probable that the majority of so-called tuberculous hips which healed in the past with very little splinting or recumbency were of this nature. Those who wish to claim credit for their successful termination can still call them very early tuberculosis, and no one is in a position to dispute the diagnosis, except in such as give a negative Mantoux test to high concentrations of tuberculin.

8. *Osteomyelitis* of the upper end of the femur of pyogenic origin is apt to simulate arthritis of the joint and probably is associated with fluid in the hip, even if this contains toxins rather than organisms.

9. *Purpura with hæmorrhage into the joint*, or under the periosteum in the neighbourhood, also simulates acute arthritis and must be diagnosed by the presence of subcutaneous and other hæmorrhages elsewhere or by the characteristic transverse line of dense calcification across the metaphyses of the chief long bones. Sometimes the pre-operative diagnosis is impossible.



Early. Late.

FIG. 3.—Coxa plana (Perthes, Legg, Calvé).

Clinical Picture

HISTORY

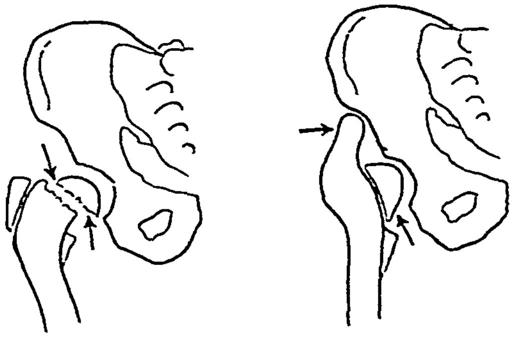
The history of hip conditions in children is seldom very enlightening and sometimes positively misleading. Thus there is usually a history of *injury*. Now, though this may have been the factor which localised an infection, yet as all children are constantly damaging themselves, it is more likely that the parent has merely recalled some insignificant fall in order to associate it with the disease. *Pain* also is misleading as it is often referred to the knee rather than the hip.

The *duration of the symptoms*, as noted by the parents, is apt to be equally misleading, for it depends entirely on their attention and powers of observation, both of which are often limited. Thus when a radiogram demonstrates a dislocation, which must have been present at birth, the mother may assert most emphatically that the child only limped from the age of four years; because it was then she expected it to acquire proper balance, and the failure of this attracted her notice. Sometimes the X ray shows destruction of the head of the femur by a slow disease like tuberculosis; yet the parents say the child only limped for a week.

Symptoms which are of value are *night-cries* and *night-sweats*, and *shrieking* when the child is bathed or handled: but they do not differentiate between an inflamed joint and the tender muscles of acute poliomyelitis. Loss of weight and loss of appetite in a previously healthy child are of importance; yet many children are constantly pernickety over food without definite cause. Complete giving-way of a limb or *inability to walk* of a child who has previously walked well may represent many causes, from sudden paralysis to severe pain of any kind.

EXAMINATION OF THE PATIENT

Two precautions are essential, and a third desirable, in the physical examination of the child.



Adolescent. Infantile type.

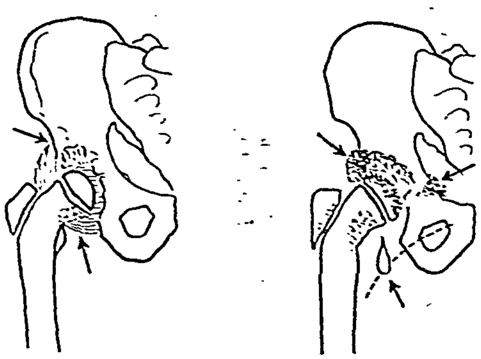
FIG. 4.—Slipped epiphysis.

1. To strip him completely. No obscure hip condition will be spotted by looking between the half-lowered trousers and the half-raised shirt.
2. To get him to walk and carry out voluntary movements *before* a hand is laid on him which may start pain.
3. To have him walk along a straight line, such as a strip of carpet, to a definite objective, such as a mirror, which latter should be fitted in every clinic and out-patient department.

1. *Gait.*—If the child is able to walk he may sway over to the affected hip at every step. This has two possible interpretations: (*a*) a reflex effort to reduce the grinding movement on inflamed cartilage, so that it is present in very early stages of tuberculosis of the hip, when patients do not keep off the bad hip, and also in coxa plana; (*b*) to reduce the mechanical strain on weak muscles, so that it is common in the slightest degree of paralysis of the glutei (the throw being backward when the gluteus maximus extensor of hip is involved) or when the tension of the abductors is upset by raising of the great trochanter, through dislocations and bending of the femoral neck.

2. *Lordosis* (hollow-back) may be the result of such a gluteal weakness, or may be a mechanical compensation for fixed flexion of one or both hips, whether permanent, or only from muscle-spasm. It is very conspicuous in dislocation cases, because the glutei have lost their fulcrum and the whole pelvis tips forward. The shoulders are thrown far back to keep the centre of gravity over the feet.

3. *One heel raised* from the ground may be due to organic shortening of the tendo Achillis from many causes, or from the effort to keep the pelvis level in spite of a short leg. In the former case, even if some shortening exists, it is rarely equivalent to the equinus, so that the affected side of the pelvis tips up. Actual shortening may be permanent ("true") from defective growth, or bone destruction secondary to many causes, or temporary ("apparent") from spasm of the hip-flexors and adductors (Fig. 6). Thus the spastic hemiplegia, the neglected poliomyelitis with foot-drop, the early tuberculous hip with spasm and the late tuberculous hip with bone destruction may all have this swaying gait with lordosis and one heel off the ground.



Early. Late.

FIG. 5.—Tuberculosis.

4. The power to *balance on one leg* may throw further light on the cause. If the heel now comes to the ground, one may know the equinus attitude is compensatory to shortening, or the spasticity slight. If the patient can stand quite or almost unsupported, but the shoulders are thrown still further over the affected limb, one can exclude dislocation and diagnose severe muscle-weakness (various causes). Dislocation is demonstrated by *Trendelenburg's sign* of dropping of the whole pelvis on the femur, so that the sound side falls instead of rising. A mild degree of this seems to occur in tall flabby children, in whom the only defect revealed by X rays is coxa valga with the neck of the femur two or more inches long.

5. The *recumbent attitude* should next be observed, or first in children too young, or too ill to walk.

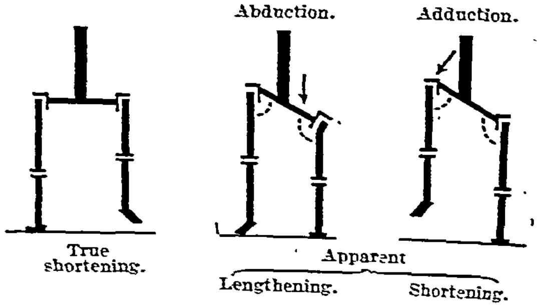


FIG. 6.—Shortening, true and apparent.

Falling outward of the foot on the affected side is common in hip abnormalities. It may be due to spasm in the very earliest stage of tubercle or other synovitis of the hip; or due to the weight of the limb in dislocations; or to shortening of the unopposed sartorius in poliomyelitis of the hip-muscles; or to twisting of the neck of the femur in rickets and slipped epiphysis. Young infants tend to lie with the lower limbs symmetrically placed and most commonly with the feet pointing inward; therefore if one foot constantly lies on its outer side while the other does not, the attitude is very suggestive of congenital dislocation, especially in the absence of any discomfort, and a radiogram should be taken at once to exclude this serious deformity, whose treatment cannot be started too young.

Asymmetry of the skin-folds on the inner sides of the thighs in very young, fat infants is very suggestive of dislocation and is another indication for radiography, which is the only certain means of making the diagnosis at the age when it is most valuable.

Raising of one patella above the other, when the infant is lying relaxed, is a better guide to shortening than measurements, which are hard to take in a fat wriggling infant. Naturally, these two signs are absent in double congenital dislocation.

Projection of one or both great trochanters (the "adult female outline") is a valuable sign to look for with the infant flat on its back. Unilateral projection and shortening of the distance to the pelvic crest proves some lesion between the trochanter and pelvis, which may be: dislocation of the head from the acetabulum, congenital, or inflammatory; bending of the neck, or slipping between head and neck; destruction of head, or neck, or both.

Lordosis, so that a hand may be slipped easily under the lumbar region, suggests fixed flexion of at least one hip.

6. *Measurements of the limbs* should be undertaken before the joints are disturbed, for they are difficult to obtain once the patient struggles. Most hip conditions are associated with wasting of the thigh muscles and much slighter, if any, wasting of the calf muscles. Considerable wasting of the latter, especially if associated with wasting of the thigh on the opposite side to the limp, is very suggestive of poliomyelitis. After paralysis has been excluded, the thigh and gluteal wasting associated with severe tuberculosis are much more marked than with any of the other hip conditions referred to, but early tuberculosis may show very little wasting. The thigh is most easily measured by running the tape a definite number of inches above the patella, so as to reach near the middle of the thigh, and then encircling the limb. Measurements below the middle are over tendons and may show little variation from the normal.

Great inequality of two limbs, which have a full range in all joints and no muscle weakness whatever, represents a form of local gigantism, of obscure origin, its only significance being the risk of severe scoliosis from unequal length of the limbs.

In measuring shortening, it is essential to have someone fix the pelvis, so that the line joining the two anterior superior spines is transverse to the body-axis, as slight tilting of the pelvis gives apparent shortening of a limb. After the true shortening has been ascertained it is useful to measure from the umbilicus to each internal malleolus, which gives the apparent shortening from flexion and adduction of the hip.

7. *The range of the hip-joints* to passive movements may now be tested. Flexion is the one which causes least pain and should be done first, beginning with the unaffected limb; when this knee is on the chest, it should be noted whether the affected thigh rises from the table, which indicates fixed flexion of that hip. As already remarked, the cause of such flexion may be actual bone change, or only flexor spasm in early joint disease, in early and late poliomyelitis, and in spastic paralysis. The angle should be carefully recorded for future reference, as it provides one of the most valuable guides to progress. When each hip has been flexed in turn, both should be brought up together and externally rotated (frog-position). If a hollow is seen in the groin, where the head of the femur should lie, it is very suggestive of dislocation.

Abduction of the hips is limited in most hip abnormalities; the shortening of the adductors may be developmental, as in congenital dislocation, spasm as in spastic paralysis, or protective in inflamed conditions of the joint. Adjacent inflammation, such as osteomyelitis and early extra-articular tuberculosis, does not show much adductor spasm, though a little flexor spasm may be associated with them. Inflamed glands and appendicitis and kidney inflammation are other causes of spasm of the hip flexors.

External rotation is reduced only in severe arthritis, whereas internal rotation is reduced early in tuberculosis and coxa plana, and its return is late and is one of the signs of complete recovery. Lesions of the neck of the femur, also dislocations, throw the limb into marked external rotation.

8. *Palpation of the hip* region should be reserved for the end of the examination, as it is likely to bring out pain in inflammatory conditions or to irritate a nervous child.

The great trochanter should first be felt and, if it is raised on one side above the other, as already noted, the lesion is between it and the pelvis. If it lies very far back, one has anteversion of the neck, which is common in congenital dislocation. While the fingers of one hand lie along the outer side of shaft and great trochanter, its thumb should be placed below the middle of Poupart's ligament and an attempt made to compress the femoral artery over the head. If the artery disappears into a soft bed of muscle, one knows the head is dislocated and then one must feel round with the thumb for it, while the second hand grasps the knee and gently rotates the limb. If this moves the head just below the anterior superior spine, one is dealing with an anterior dislocation. If the head is not there, carry the child's knee across its chest and feel on the outer face of ilium under the glutei, where the head, in cases of posterior dislocation, can be made to project under the skin.

Tenderness over a normally situated head is suggestive of arthritis, though it may occur in coxa plana. In severe cases pain, similar to that which occurs spontaneously, can be induced by jarring the great trochanter or the heel. It should be emphasised that the absence of these signs and of limitation of movement in all directions does not exclude early tuberculosis of the joint. As already pointed out the lesion is so apt to start extra-articularly, that if one waits for the signs of acute arthritis, one will be waiting for unnecessary bone destruction. Any case with muscle spasm and tenderness in the region of the hip should be treated with the same thoroughness as a frank tuberculosis until all signs and symptoms have disappeared. It is with tuberculous hip, as with other orthopædic conditions, that, though attempts at early diagnosis and treatment improve the average results, yet they by no means simplify the work of the surgeon, nor reduce the total burden on a hospital; for they involve the special treatment of many cases which might have recovered with casual treatment at home.

9. Finally, let us not despise the help of the laboratories, the Wassermann, the blood-sugar and sugar-tolerance tests, and the Mantoux test. Of it, as of older tuberculin tests, it seems true that a positive in an infant is strongly suggestive of active tuberculosis; while a negative in an adolescent almost excludes tuberculosis of the hip, where other signs are doubtful. The converse is not true.

EFFECT OF TREATMENT

Treatment is not included in the scope of this paper, but it must be remarked that sometimes the effect of adequate splinting in recumbency provides the final essential diagnostic test. Certainly, no abnormality of the hip region in a child should be regarded lightly, nor should it be watched except in a first-class hospital. In the past too many congenital hips were watched till they were irreducible, because "the limp was not getting worse"; too many tuberculous hips have developed gross deformity, because radiography with a poor apparatus or a poor technique "showed a "normal joint." Therefore it is safe to say that the diagnosis as well as the treatment of hip abnormalities in children demands first-class nursing, prolonged and constant observation, and first-class radiograms interpreted by an expert. Nobody who fails to command these facilities should undertake the serious responsibility of keeping a hip patient out of an orthopædic hospital.

INDUCED WATER RETENTION IN DIAGNOSIS OF IDIOPATHIC EPILEPSY

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After the exclusion of other causes of seizures, there remain cases in which the differential diagnosis between idiopathic epilepsy and hysteria can be made only when an actual fit has been witnessed by a trained observer. This may prove a difficulty when the fits are infrequent, even though the patient is detained in hospital for this purpose.

Jacobsen[1] has proposed a test to establish the diagnosis of epilepsy in the shortest possible time. It is founded on the theory that retention of water in the body will precipitate a fit in predisposed persons. To induce a positive water balance he administered large quantities of water by the mouth, accompanied by hypodermic injections of Pitressin. This is the pressor and antidiuretic principle of the posterior lobe of the pituitary body, as distinct from the oxytocic, and has the property of causing water retention in normal individuals. It also causes a slowing of the pulse, and stimulates the involuntary muscle of the alimentary and genito-urinary tracts. An increase in the body-weight of from 3 to 6 per cent. was taken as an indication that a positive water balance had been produced.

Jacobsen tested some 40 patients in this way, mainly children, and found that a fit occurred in all his epileptics once the water balance had been rendered positive. The only failures he had were with a few epileptics in whom a positive water balance could not be induced and in two patients who became nauseated, so that the test was discontinued. A series of normal controls tested in a similar manner had no fits; nor did the epileptics have them when they received pitressin alone or water alone.

PRESENT INVESTIGATION

We have repeated Jacobsen's procedure in 16 adult epileptics and 7 non-epileptic controls. Our object has been to confirm his results, or otherwise, and further to see whether any changes in the osmotic pressure of the blood accompany the water retention. The epileptics tested were patients who had fits relatively seldom. They were kept in bed during the investigation; ordinary diet was taken, and in cases where Luminal had previously been administered it was continued. At the beginning of the test the bowels were opened by an enema, the patient passed urine, and the weight was taken. An injection of 0·25 c.cm. of pitressin was then given hypodermically, along with 300 c.cm. of water by the mouth. Subsequently water was given by the mouth in amounts of 300 c.cm. every two hours, and hypodermic injections of 0·5 c.cm. pitressin every four hours, until ten injections had been given. If a fit occurred before this, no further water or pitressin was administered. In the latter event ordinary diet was stopped and 5 oz. cream was given four-hourly until the fits ceased. The patient was weighed every four hours, and all the urine passed was measured.

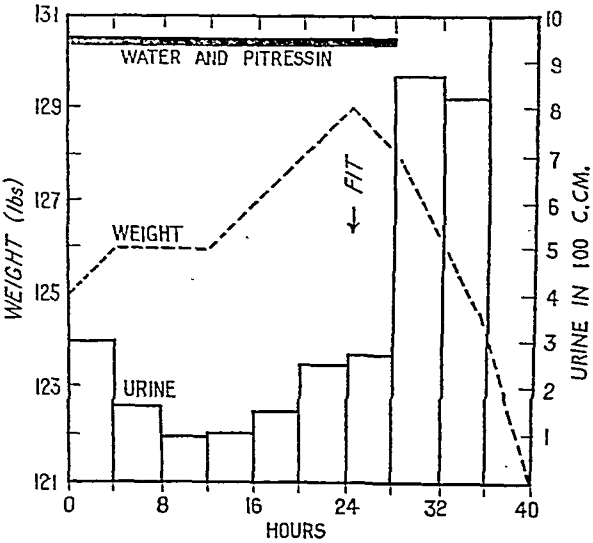

FIG. 1.—Results of a test showing increase in weight during administration of water and pitressin, followed by a fit.

Pallor followed the administration of pitressin in each case; it usually became noticeable about five minutes after injection and lasted up to two hours. It was accompanied by slowing of the pulse, but there was no marked alteration in the blood pressure. After two or three injections the action of the drug on the intestinal muscle was shown by slight looseness of the bowels. In all the cases the excretion of urine was diminished, and in one patient suffering from chronic nephritis considerable œdema of the ankles and face was produced. No œdema developed in any of the other cases, and it would appear that this condition constitutes a definite contra-indication to the carrying out of the test.

Table showing Results of Water Retention Test

Case.	Fits per year.	Pitressin and water.	Case.	Fits per year.	Pitressin and water.
1	41	+	9	25	+
2	18	+	10	26	+
3	8	+	11	3	+
4	17	+	12	3	+
5	5	+	13	3	Suspended.
6	16	+	14	1 in 2 yrs.	—
7	31	+	15	1 ,, 5 ,,	Suspended.
8	3	+	16	1 ,,10 ,,	—

+ = one or more fits. — = no fit.
Pitressin administered alone } = no fit.
Water ,, ,, }

Fig. 1 illustrates a typical case. There was a progressive increase in the body-weight during the administration of pitressin and water, with a definite drop when it was discontinued. The excretion of urine was affected conversely. A fit occurred after the weight had increased by 4 lb.

The accompanying Table shows that of the 16 epileptics tested. 12 had one or more fits during the administration of pitressin in combination with water. In 2 of the 4 negative cases, the test had to be discontinued because of hiccup and vomiting. The other 2 were both cases in which the fits were normally very infrequent. In none of the 7 controls was a fit induced by pitressin and water, nor in any of the epileptics to whom water or pitressin was administered alone.

CRYOSCOPIC ESTIMATIONS

The osmotic pressure of the blood depends on its molecular concentration, which can be accurately determined by the estimation of the freezing-point. Any retention of water in the blood stream will consequently be shown by an elevation of the freezing-point, provided that the retention is not compensated, from an osmotic standpoint, by simultaneous retention of urinary solids.

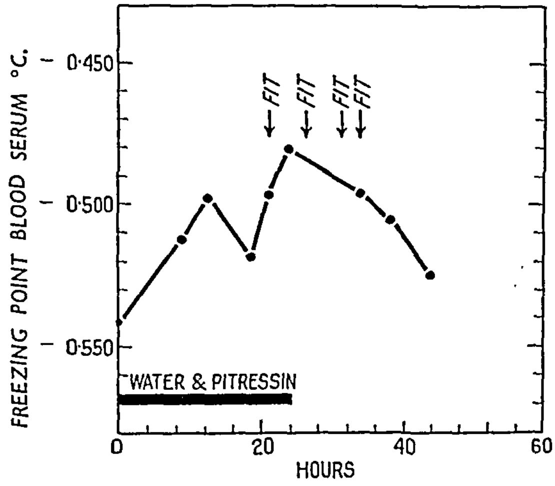

FIG. 2.—Freezing-point of blood-serum in relation to fits induced by administration of water and pitressin.

According to Margaria [2] the average freezing-point of the blood is −0·553° C., and under normal conditions remains remarkably constant. Water-drinking is normally followed by prompt diuresis and there is only a slight reduction of the freezing-point, the excess fluid being readily taken up in the tissue spaces of the muscles. But when water is taken during the antidiuretic action of posterior pituitary lobe extract, Fremont-Smith [3] and others have shown that an appreciable dilution of the blood takes place, which is followed by a similar dilution of the cerebro-spinal fluid. We therefore thought it would be of interest to estimate the freezing-point of the blood-serum of our epileptics in order to determine the change in osmotic pressure at the time of production of the fit.

The apparatus used was the Beckmann-Heidenhain cryoscope, and the usual precautions were observed with regard to the temperature of the cooling bath, the amount of supercooling, and the uniformity of stirring, which was carried out by hand. Solidification was induced by the introduction of a small crystal of snow. Specimens of blood obtained by vein puncture were centrifuged, and the serum kept under oil until the estimations were made.

A preliminary investigation was carried out on 3 epileptics by estimating the freezing-point at the beginning of the test, and immediately after the production of a fit. In these cases there was an elevation amounting to 0·039, 0·054, and 0·060° C. Samples of blood were then taken at intervals throughout the test, and in 3 epileptics a freezing-point curve was obtained which showed a progressive lowering of the osmotic pressure of the blood more or less in proportion to the quantity of water ingested and the increase in body-weight. Fig. 2 illustrates the type of curve obtained, which shows that at the time the fits occurred there was a considerable disturbance of the osmotic regulation of the tissues. Experimental water intoxication in animals results in retching, vomiting, and violent convulsions, but it must be remembered that epileptic phenomena are more readily produced in animals than in man.

The epileptic appears to have an unstable nervous system which is hypersensitive to sudden changes in the osmotic pressure of its tissue fluids, and in the above test the fit may represent a reaction to the inflow of water into the cerebral tissues.

CONCLUSIONS

This test for idiopathic epilepsy is of definite value in arriving at a diagnosis in doubtful cases. No fit may be induced, however, when the patient has them very infrequently, and therefore a negative result is not absolutely conclusive. The water retention is accompanied by marked lowering of the osmotic pressure of the blood-serum, and it is probable that the resulting exudation of fluid into the nervous tissues is the precipitating factor in production of the seizures.

We wish to express our thanks to Dr. A. Pool, medical superintendent of the South Yorkshire Mental Hospital, for his helpful advice; also to Nurses Russell, Platts, Robinson, Wingfield, and Norton, for the care with which they carried out the technique.

References.—1. Jacobsen, A. W.: New York State Jour. Med., 1931, xxxiv., 506. 2. Margaria, R.: Jour. of Physiol., 1930, lxx., 417. 3. Fremont-Smith, F.: Brain, 1931, liv., 303.

A NOTE ON THE
BLOOD CHEMISTRY IN EPILEPSY

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THE relationship between epileptic seizures and the amount and distribution of water in the tissues and tissue spaces has been stressed during the past few years. The work of McQuarrie and his colleagues [1] and other workers appears to indicate that the beneficial effect of ketogenic diet is associated with removal of surplus fluid. On the other hand, Byrom [2] failed to detect any changes either in the net water balance or in the amounts lost by any of the excretory routes (urine, skin, &c.) during the twenty-four hours *before* a convulsion. He found, however, that the seizure was followed by a loss of body-weight resulting from the excretion of extracellular body fluid which in turn was succeeded by a retention of water and a corresponding rise of weight. Although he was unable to demonstrate any alteration in the gross amount of water of the body which might lead to an attack, Byrom[2] admits the possibility of an alteration in the normal distribution of water between cells and extracellular spaces.

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* McCunn Medical Research Scholar. † Muirhead Scholar.

In the hope of obtaining some information on this problem we investigated the water content of the blood obtained from epileptic patients during a fit and compared the findings with those obtained in the quiescent stage. To do this the percentage volume of red cells, serum protein, and whole blood chloride were determined. Normally the ratio of corpuscles to plasma is about 40 to 60. Any change in the degree of hydration of the blood will be reflected by an alteration in this ratio. Changes in the concentration of plasma protein and blood chloride will also indicate abnormality in the water content of the blood. At the same time it was found possible to obtain values for the serum calcium, phosphorus, and phosphatase.

The researches of others on serum calcium are too numerous to quote; a summary of the more important results is given in the monograph by Lennox and Cobb,[3] who conclude that the calcium content of the body fluids in epileptics is normal. Recently a paper has appeared by Spitzer,[4] who states that more than half the number of cases of true epilepsy show deformities of teeth and suggests that there may be interference with thyroid and parathyroid action. It was therefore thought worth while to determine the value of serum calcium and phosphorus and phosphatase, the latter substance being a ferment the amount of which is affected by parathyroid activity, and which itself plays an important part in calcium and phosphorus metabolism

Table showing Blood Analysis in Epileptics

—		No. of cases.	Range.	Mean.	Standard error.	Standard error of diff. of means.
Serum calcium (Mg. %)	F.	31	8·6 –11·7	10·28	0·55	0·16
	Q.	32	8·4 –11·4	9·94	0·22	
Serum phosphorus (Mg. %)	F.	30	2·2 – 4·5	2·996	0·41	0·14
	Q.	30	1·9 – 4·0	2·88	0·36	
Plasma phosphatase (units %)	F.	30	2·3 – 9·0	4·56	1·17	0·40
	Q.	30	2·5 – 8·5	5·16	0·94	
Red blood-cell (per cent. vol.)	F.	24	24·2 –53·3	40·36	4·56	1·68
	Q.	24	31·8 –47·3	38·75	3·20	
Serum protein (g. %)	F.	24	6·74– 9·40	8·28	0·48	0·21
	Q.	24	6·90– 9·46	8·098	0·51	
Blood chlorine (c.cm. N/10 %)	F.	17	64·30–80·10	74·75	2·69	1·85
	Q.	17	64·20–92·80	76·66	4·39	

F. = fit; Q. = quiescent.

The patients, 32 in number, were all adults and true epileptics, who had been resident in Gartloch Hospital for at least six months. Blood was withdrawn in a quiescent stage of at least three days' duration, and only those samples were accepted which proved to have been taken at least forty-eight hours before a convulsion. In the same patients blood was also withdrawn during an attack. The results are detailed in the accompanying Table.

The percentage volume of red cells was determined by centrifugalising oxalated blood (1 drop of 15 per cent. potassium oxalate solution to 5 c.cm. of blood) for half an hour in a graduated tube. For the quiescent stage the mean value was found to be 38·75 and during a seizure 40·36. These were not found to be significantly different. One finding, however, is of interest—viz., the greater range of red cell volume observed during the fits. Lennox and Cobb[3] report normal values for hæmatocrit readings in 100 epileptic patients, but they do not state whether or not the blood was taken during a convulsion. Although their findings were higher than those recorded here, it is probable that difference in method and the presence of anæmia in some of the present series may account for this variation. Clemmesen[5] examined the blood in normal subjects and epileptic patients while on normal diet, and during a period of inanition; he found no change in the percentage volume of blood corpuscles in either group.

In our series neither serum protein nor blood chloride varied significantly as a result of a fit. The mean value obtained for serum protein (8·10 g. per cent.) (estimated refractometrically) tallied with that recorded (8·3 g. per cent.) by Wuth[6] using the same method. These results indicate that if any interchange of water between cells and tissue spaces does occur, it is not reflected in the blood stream. It is possible, however, that the greater range of values obtained for red cell percentage volume during fits is due to a greater instability of water metabolism during the epileptic convulsion.

It will be seen from the Table that the mean values for serum phosphorus do not differ from those of a normal series. An increase during the fit was shown in 19 cases and a decrease in 9. The mean values for phosphatase determined by the method of Jenner and Kay[7] are lower than normal (6·6). Of 30 cases observed during the fit 13 had values below 4·0 which we consider to be the lower limit of the normal range and only 3 above 6·6. In 19 cases there was a decrease during the fit and in 11 an increase. When, however, the mean values of both phosphorus and phosphatase are considered, it is obvious that neither shows a significant difference as a result of the convulsion.

As regards serum calcium the mean values are within normal limits, but the quiescent figure is 0·34 lower than that obtained during the fit. A statistical consideration of these figures shows that it is just possible that the observed difference is significant, but the probability of this being so is not great enough to justify more than a passing mention. Of the individual cases 20 out of the 32 examined showed an increased value for serum calcium during the seizure. These results suggest that there may be some slight disturbance in calcium and phosphorus metabolism but of a secondary nature.

CONCLUSIONS

Investigation of the blood chemistry of epileptic patients at a quiescent period and during a convulsion does not reveal any significant difference in the composition of the blood, except possibly a greater variation in percentage volume of red cells and a slight rise in serum calcium during the fit. We do not consider that the changes are wide enough or sufficiently constant to lend support to the view that the onset of an epileptic seizure is associated with alteration in water metabolism.

We desire to express our thanks to Dr. A. M. Dryden, medical superintendent of Gartloch Hospital, Gartcosh, for the facilities which he afforded us, and to Prof. G. B. Fleming, Dr. S. Graham, and Dr. N. Morris for their helpful advice.

(*References at foot of next page*)

ATYPICAL MUSCLE STRAIN

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The following are put forward as the arguments on which the essay is founded :—

Argument

1. Pain which may reach great severity often arises from atypical muscle strain.
2. The sites of these strains are often overlooked, because the usual signs of muscle strain are frequently absent, and often the pain is ascribed to coexistent conditions.
3. The cause of atypical muscle strain is unsatisfactory repair of soft structures due in general terms to ill-health, deficient circulation locally, to chronic local fatigue of muscle, and incoördination.
4. These atypical strains can be located with certainty by simple electrical tests.
5. Satisfactory results from treatment demand a reasonably good state of health, so that the appropriate local remedies may take effect. Bad muscular habits which induce local muscular fatigue must be adjusted.

When flaccid, a muscle should be sufficiently extensible not to suffer strain within the normal range of joint movement, so that it is reasonable to suppose that muscle-fibres which happen to be inactive do not suffer strain. But, if a sudden force is applied while a large number of muscle-fibres are contracting, strain is likely to occur. Again, if a sudden force, such as would arise through loss of balance, is applied when a muscle is under a light load, more fibres come into action by reason of the "stretch-reflex" mechanism ; if the force does not yield to this reinforced action by the muscle, strain may take place. In both these circumstances a number of neighbouring fibres are in action and can become damaged, as they are subjected to considerable force. If damage results, a condition of acute strain is found at a point which is recognisable by tenderness over the site of injury, by swelling and by increased pain on voluntary movement. This constitutes the classical muscle strain which is rarely overlooked. Milder forms of the acute condition are seen. They are as a rule easily recognised, although one or more of the signs of acute muscle strain happen to be absent. The inflammation that follows an acute muscle strain should lead to a satisfactory repair, and the scar tissue which is laid down should not impede the subsequent function of the muscle. This is not always so.

HYPERSENSITIVITY TO THE FARADIC CURRENT

In certain cases it has been noticed that a few weeks after a strain portions of a muscle are distinctly hypersensitive to the faradic current, so that the patient experiences a sensation of needle pricks, of a bruise, or of a sharp boring-in pressure, whilst on the surrounding undamaged muscle the identical current gives the usual feeling of quiver. Hypersensitive areas located in this way are frequently found at the same time as the patient is experiencing either referred or diffuse local pain ; in fact, sometimes stimulation of the hypersensitive area gives rise to this pain. After suitable local treatment of the areas in question both the hypersensitivity and the pain disappear. There thus appears to be a definite relationship between atypical muscle strains and pain which is either referred to a distant part or is local, although vague and diffuse. To explain this hypersensitivity to the faradic current is not easy, but possibly scar tissue, formed within the muscle after the accident, is contracting down on nerve filaments in contact with it and rendering them irritable. The symptoms may be conveniently regarded as being the result of matting together of fibres of muscles or fascia and sensory nerve twigs, possibly due to the organisation of an inflammatory exudate.

In many cases there is no history of a strain, but as a result of a hypertonic condition of the muscles in question one finds a local chronic fatigue, as will be described later.

Characteristics of Atypical Muscle Strain

Of the characteristics from a clinical point of view the first four are of special importance.

1. Lack of tenderness to pressure.
2. Delay before the patient experiences pain due to the atypical strain. This delay is sometimes a matter of weeks.
3. Absence of pain on passive movement.
4. Absence of objective physical signs, such as swelling or redness.
5. Diffuseness.

When hypersensitivity to the faradic current is found in muscles, this is frequently diffuse over quite a large area. It is often found along lines of mechanical stress in a series of muscles that are used in some occupation or habit, rather than within definite anatomical boundaries. It is not easy to explain why diffuse damage should occur in the belly of a muscle without localised damage at any one point producing classical signs of acute strain. When light work is being performed, muscle-fibres come into play in rotation in a manner similar to the process found in the capillaries. In a muscle with lowered vitality through chronic fatigue or ill-health, it would seem that, when the local load is suddenly increased, instead of a reinforcement by further muscle-fibres occurring through the "stretch-reflex" mechanism, the individual fibres which happen to be contracting become damaged.

6. Another distinction between the acute and this atypical form of muscle strain is the *absence of pain on active movement*, which is often a characteristic of the latter. This absence of pain does not preclude the existence of strain in a muscle because, when a muscle contracts during a voluntary movement, only a portion of its fibres are brought into use. It therefore seems quite feasible that the absence of this sign of strain is noted, because the strained portion of the muscle was not brought into play during the voluntary test.

We must mention that stretching a muscle affected in the manner under discussion may produce referred or diffuse local pain. Confirmation of this must, as a rule, rest on the elimination of the pain following treatment of the hypersensitive portion of the muscle, as it would of course be hard to show absence of pain from neighbouring

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structures involved in the movement. Hypersensitive areas in the abdominal wall sometimes exemplify this. When the strained muscular wall is stretched as a result of flatulence, pain may be severe and may radiate extensively, often down to the scrotum. After treatment, flatulence causes similar stretching of the muscular wall, but without the pain previously experienced.

7. In some cases after these strains have been cleared up an increased range of joint movement has been reported by the patient, and is noticeable to an observer. This seems to indicate that these atypical strains can be responsible for local muscle spasm in their vicinity. This spasm produces local chronic fatigue, which predisposes to further atypical muscle strain. It is thus a feature of these strains that the area affected tends to increase in size with the passage of time.

8. Absence of tenderness to touch and other recognised signs of muscle strain may lead to the pain being ascribed to another factor, especially if some disability such as gross osteo-arthritis of the hip-joint is coexistent. We have seen this occur, where severe pain felt down the inside of the leg to the knee was subsequently shown to be due to atypical strain located in the gluteus medius muscle and in fascia near the great trochanter; similarly, pain felt in the groin and radiating down the inner side of the leg was due to atypical strain in the pectineus and sartorius muscles. It thus seems reasonable to add a final characteristic, namely, elusiveness, realising that it is merely an indication for applying an electrical test rather than an adequate proof of strain. At the examination the presence of these atypical strains arouses an impression that something beyond the evident bodily defects is needed to account fully for the degree and distribution of the pain, discomfort, or weakness of which the patient complains, or which he appears to have. This feature of elusiveness possessed by atypical strains is sometimes responsible for patients being erroneously described as neurotic; the electrical tests, however, throw valuable light on this difficult question.

Causes of Atypical Muscle Strain

Whilst admitting that there are other points of view, it does not seem that any of the cases we have studied during the last seven years require any more complex explanation than is given below. We are grouping the factors affecting the situation under four headings for the sake of clearness, although in practice they usually interact, so that it is hard to settle their relative importance or, sometimes, to pick them out individually. This interaction often presents a difficulty when choosing a line of treatment, and is thus important clinically.

1. *Trauma during ill-health.*—We have already alluded to causes and mentioned that possibly organisation of inflammatory exudate within a muscle contracts down on sensory nerve twigs and renders them irritable. Whatever may be the exact nature of the cause, we can describe it in general terms as an unsatisfactory repair of the soft structures. One group of factors which predispose to a failure in repair comes under the heading of a poor state of health.

2. *Stasis and poor blood-supply.*—Unsatisfactory repair of the soft structures tends to occur in the presence of poor blood-supply and stasis. Thus, exposure to cold, general fatigue, or reduced activity (either due to pain or during immobility owing to the treatment of a fracture) may lead to an acute muscle strain becoming chronic by assuming this atypical condition. The result of a combination of cold, deficient blood-supply, lowered activity of intrinsic muscles, and local engorgement of tissues is sometimes seen in the feet of patients with a poor circulation. Under these conditions minor strains arise and, as they fail to clear up, the patient experiences pain due to irritation of the sensory nerve twigs involved.

3. *Weakness and incoördination.*—Atypical strains are also found in weak and incoördinate muscles on which a heavy load is suddenly thrown. For example, these diffuse strains are seen in the gluteus maximus muscles in the patients who, through bad habit, do not normally use these muscles, but rely too much on the hamstrings. Their buttock muscles thus become anæmic and infiltrated with fatty tissue. When an unusual exertion such as stepping off a bus is made the buttock muscles suffer and, being normally little used, repair does not proceed in a satisfactory manner. Hence a state of atypical strain supervenes.

Athletes who train too rapidly may subsequently suffer from atypical muscle strains.

Strain due to incoördinate action also occurs in muscles which suffer from local chronic fatigue. These *fatigued muscles are prone to injury with inadequate* cause; an awkward movement, as when tying a bootlace or lifting something, is enough to produce strain. Possibly local chronic fatigue upsets normal coördination and synergic action of muscles. When patients with these troubles are watched performing purposive movements with the muscles in question exposed to view or to touch, a staccato action in place of the usual rhythm is seen. As the precipitating cause is so trifling, and as the latent period before pain is felt is sometimes a matter of weeks, the significance of chronic local fatigue is sometimes missed: the trifling nature of the accident suffices to produce an atypical strain, but does not lead to the classical symptoms of an acute strain.

4. *Local chronic fatigue in hypertonic muscles* predisposes to atypical strain in muscle in the following manner. Normal muscle tone implies a state of slight constant tension which is caused by individual muscle fibres contracting in rotation. In order that the integrity of the muscle may be safeguarded, it is essential that the individual fibres be given adequate periods of rest in the relaxed state, and this is provided for by the continuous interchange of active fibres. Increased tone is obtained by a larger proportion of fibres becoming active at one time, and under these circumstances the resting phase for individual fibres becomes reduced. Hence, if this increased tone is prolonged, fatigue products tend to accumulate. This accumulation of fatigue products during sustained static contraction is accentuated by the relatively small volume of blood that traverses the muscle during this form of activity. Possibly this volune exceeds the low blood-supply in a resting unfatigued muscle, but it is totally inadequate for the demands of the muscle, and cannot be compared with the rich supply induced by exercise which involves alternate contraction and relaxation.

If, therefore, muscles are kept for long periods in a hypertonic state, chronic fatigue sets in, and it is not surprising that under these conditions we should often find unsatisfactory repair of the soft structures, which leads to atypical muscle strain. This is observed clinically even in muscles which show an unusual amount of development. It seems also that the chronic fatigue gives rise to mild persistent damage of soft structures, which will suffice to begin the trouble without the occurrence of any recognisable injury. In these cases where pain has supervened, no permanent relief is obtainable until the hypertonic state has been dispensed with. Restoration of the normal muscle balance is thus an essential part of treatment.

Detection by Electrical Tests

Hypersensitive areas associated with atypical muscle strain can be conveniently located by two methods. The first is by means of minimal faradism using the current drawn from the Smart-Bristow coil. This is convenient, because this coil is in constant use and is well understood. As already described, the patient notices differences of sensation when the current is passed through normal muscle and muscle suffering from atypical strain. The peculiar sensation of pain, when the electrode is applied to the area of strain, is never confused by the patient with the normal sensation of faradism. This minimal faradic test uses a low voltage current, and the amount of the current which passes to the muscle under test depends on the electrical resistance of the overlying tissues. If the horny layer is thick, if it is patchy—as when local exposures of ultra-violet rays have been given—if the patient is very fat, or if the muscle in question lies very deep, the results of the test may be hard to evaluate.

The second method is to use a current which reaches the damaged muscle without being affected by variations of resistance of the superficial tissues. This is achieved by fully rectifying an alternating current without any smoothing, and controlling it by regulation of the filament current of the rectifying valve. This current being of an unidirectional pulsating nature has an added advantage of being easily measured by means of an ordinary milliammeter. It may conveniently be called "rectified A.C."

When using this rectified current for testing, it is essential to keep constant the area of contact between the electrode and the patient's skin. Thus, considerable care is needed, when testing over prominent bony points, such as the epicondyle of humerus. If this area of contact is kept constant, there is no possible risk of using an excessive current flow or density, as with a suitable arrangement of resistances control of the patient's current is most satisfactory. The method has advantages over the faradic current.

Treatment

A poor state of health was given as a cause for failure in the initial repair of soft structures and the consequent production of atypical muscle strains. It is of equal importance when we are aiming at bringing about an adequate repair by means of local remedies. Improvement of general health is beyond the scope of this article, so we shall not deal with this aspect of the subject which, with certain patients, is of the utmost importance. It must be mentioned that many patients who acquired atypical muscle strains when in a poor state of health are found to be perfectly fit when they come for treatment; this shows that a return to normal health alone may be insufficient to improve the muscular condition.

LOCAL REMEDIES

A satisfactory choice of local remedies often gives results in a single treatment, but to achieve this localisation of the site of atypical strain is essential, so that the beneficial effect of the treatment is not wasted on other areas. It is of relatively little value to treat an area of referred pain as compared with treating the site of the atypical strain, hence the great importance of the electrical tests in all but the simplest cases.

Two remedies for atypical strain which are generally efficacious are local doses of ultra-violet rays and histamine ionisation. The effects of these are somewhat similar because local doses of ultra-violet cause a liberation of small quantities of vasodilatory substances over a long period, producing the characteristic "triple response."

Broadly speaking, the former of these two is able to cover at one sitting a larger area than the latter, and give a longer effect, but may be correspondingly less potent. Where the skin is thick, as on the sole of the foot, or where it is deeply pigmented from exposure to the sun or to ultra-violet rays, histamine ionisation is more useful. On the other hand, histamine ionisation must be used with great care, and must never be given when there is gross heart disease or low blood pressure; occasionally the effects on respiration and on peristalsis are contraindications, with allergic patients. Often the choice between these two depends on expediency; it is unwise to make a local pigmentation by ultra-violet on the shoulder of a lady who wears evening dress, and it is equally undesirable to give a histamine headache to a business man who is about to put through an important deal.

Massage, radiant heat, infra-red rays or diathermy (either short or long wave) often do not succeed, and may even exacerbate the pain. They may, however, prove useful adjuncts to local doses of ultra-violet or to histamine ionisation.

RESTORATION OF MUSCLE BALANCE AND NORMAL RELAXATION

This must be dealt with briefly, so as to keep in line with the foregoing. The adjustment of faulty muscular habits which produce chronic fatigue in hypertonic muscles is, as a rule, simple, even with the elderly and decrepit, but not so by the usual method of repeating the desired movement or posture as an exercise, because this deals with one side of the problem only.

These bad habits occur unnoticed by the patient, as they belong to the background of his daily activities being almost part of himself. Thus, sensations connected with them must be pointed out to him, and made to stand out like highlights against this background, whenever they recur; for example, pressure of the collar against the neck can be used to remind the patient of a poking forward of his chin. The bad habits are often linked up with emotions such as the fear of falling or of pain on movement, sometimes being the patient's response to instability of his feet or ankles. Unless newly forming habits are practised under conditions which do not arouse these unconscious fears, much time will be wasted.

Purposive movements, such as rising from a chair, must be encouraged in a painless manner. Conditions which encourage the good habit must be studied; when walking upstairs, the patient will probably avoid a retracted neck position which may have been associated with a spasm of the lumbar muscles, if he looks at the step on which he is going to place his foot. It is essential to train sensation, so that the patient can check the results of his efforts; should he experience any feeling of effort in the fatigued muscles, when doing a movement, it cannot have been done correctly. The knowledge of success each time he tries and the relief to his previously hypertonic muscles form a talisman against relapse for the patient who knows how to help himself with understanding.

THE ELECTRICAL TESTS

A test for atypical muscle strain should be applied after each series of two or three treatments, when dealing with difficult cases, as this regulates the programme of treatment outlined before treatment began. This is important when coexistent conditions are present and may themselves require attention, or when several areas of atypical strain appear to refer pain to the same distal area. It is also most useful when an atypical strain giving a diffuse local pain exists in a portion of the body to which pain is referred by other distant strains. As an example of this, one may mention how some patients, on the one hand, feel pain referred from the lower back or the buttock muscles to the foot and below the knee, and, on the other hand, have atypical muscle strain near the external malleolus, which gives a diffuse local pain in the same area. The tests, of course, locate strain in the fascia as well as in a muscle belly.

Conclusion

We wish to emphasise that atypical strains are liable to be overlooked; that the pain they produce is likely to be ascribed to other causes; and that the electrical tests which elicit these strains are therefore clinically important.

We wish to express our gratitude to Mr. A. T. Fripp for his valuable suggestions as regards the production of this article.

THE TONSIL AND ADENOID OPERATION

REASONS FOR REVERSAL OF THE USUAL ORDER OF REMOVAL OF THE TONSILS BEFORE THE ADENOIDS

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THE operation for removal of the tonsils and adenoids in children is such a common one and is in practice performed by such a variety of surgeons that it is surprising that there is almost complete unanimity in dealing with the tonsils prior to the adenoids. A few text-books have mentioned the fact that the usual order of the operation might be reversed, but it is probable that the general belief in the safety of a short and light anæsthesia has made it essential that the nasopharyngeal part of the operation should be done last; because, whereas every step of the tonsil removal is taken under full visual control, the nasopharynx, on the other hand, can only be examined digitally, and during the adenoidectomy there is next to no risk of serious instrumental injury to some vital tissue—an accident which is always at the back of the surgeon's mind as a possible if highly improbable complication during the removal of the tonsils.

The advent of the use of the Davis gag, the elimination of the use of the blunt or sharp guillotine, and the safety of a longer and deeper anæsthesia, has made possible a much more deliberate technique, and therefore other methods may be worthy of consideration.

When the patient is in the extended head position and with the pharyngeal reflex abolished by the anæsthetic, it is possible by using a Davis gag (or any form of dental gag with displacement of the tongue) to obtain a complete view of the field of operation for the removal of the tonsils, and with a little practice the operation can be carried out quickly and with only slight hæmorrhage. It is therefore very unusual to see a child who has been operated on by this method with a so-called "tonsil remnant" showing later. Although the actual tonsillectomy has been made so much easier by the improved view of the operation field, the only additional help with regard to the adenoidectomy is that the removal may be more deliberate owing to the continued administration of the anæsthetic.

It is in my experience fairly common to meet with a child in whom there has been a partial and unsatisfactory removal of the adenoids, but uncommon to see one in whom there has been an incomplete tonsil removal. This is because, as has been stated above, the tonsillectomy is no longer a "trick" operation, but in performing adenoidectomy the surgeon is still compelled to work in a cavity which it is impossible to inspect and by inspection make sure that his operation has been completed.

For several years now I have invariably practised the removal of the adenoids as the first stage in the tonsil and adenoid operation. The exact method of removal of the adenoids is not here under consideration, but it is not so easily carried out with the Davis gag as with a simple incisor gag, owing to the fact that the tongue blade of the Davis gag puts tension on the faucial pillars and this makes instrumentation of the nasopharynx more difficult.

The adenoid operation is started under exactly the same depth of anæsthesia as is required for the tonsillectomy and with the head in the same extended position. As soon as the removal of the adenoids has been completed and the surgeon has satisfied himself by a careful digital examination of the nasopharynx that the adenoid tissue has been completely removed, the nasopharynx is firmly packed with a gauze plug. Hæmorrhage from the nasopharynx is thus at once completely checked. The tonsil operation is then performed in the usual way, and if an ordinary form of dental gag has been used for the operation up to this point it can be safely removed and a Davis gag substituted.

It may here be objected that the fact that the nasopharynx is completely filled with a plug will add to the difficulty of the tonsil operation, since the blood cannot escape from bleeding tonsillar vessels into the nasopharyngeal cavity and will tend to fill the mouth more rapidly. This is to a certain extent true, but it should be possible to carry out the tonsil operation with so little hæmorrhage that this can be easily dealt with as the blood collects, without in any way endangering the airway; and if it is thought necessary a suction apparatus can be kept ready to remove any excess of blood. If more than one nasopharyngeal plug is used it is absolutely essential that the number of plugs or sponges should be counted, so that it is made certain that they are removed at the end of the tonsillectomy operation; and it is probably safer only to use plugs that have a thread or thin tape attached to them.

ADVANTAGES

The following advantages are obtained by operating on the adenoids as the first stage:—

1. The adenoid operation is carried out with the faucial pillars still intact and supported by the tonsils and there is therefore no danger of tearing or damaging them when passing an instrument or an examining finger into the nasopharynx. This is an accident which may occur if the tonsils have been removed first, particularly in small children and when the Davis gag is used, and although it may be considered trivial it will result in unnecessary scarring.

I consider that it is absolutely essential to digitally examine and as far as possible inspect the nasopharynx immediately after the adenoidectomy.

2. As soon as the adenoid operation is completed the nasopharyngeal plug arrests the hæmorrhage and there is less actual loss of blood than if the bleeding is allowed to stop by the ordinary process of clotting.

3. It is a great advantage that at the end of the adenoid and tonsil operation, after the removal of the nasopharyngeal plug, the child can be at once removed to bed with less risk of a blood clot forming in the deep pharynx; and there will be less soiling of bed linen due to blood trickling away from the nose.

4. I certainly think that the frequently applied method of removing the adenoids while the patient is "coming round" from the anæsthetic cannot be too strongly deprecated. Under these conditions the palate muscles contract and the adenoid operation is

rendered much more difficult and at the same time, owing to the liability of the patient to stop breathing by contraction of the laryngeal muscles followed by a sudden violent inspiration, there is more risk of blood and infected secretion being sucked into the lower air-passages.

Clinical and Laboratory Notes

AN UNUSUAL CASE OF MECKEL'S DIVERTICULUM

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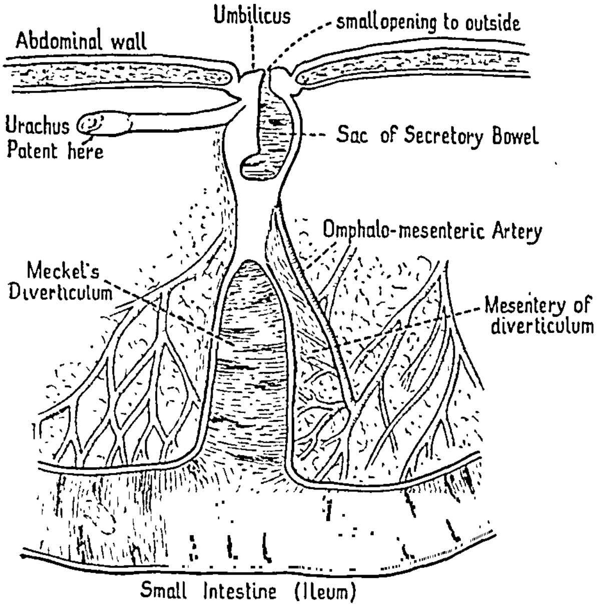
Meckel's diverticulum, according to Keith, is the persistence of the intra-abdominal part of the vitello-intestinal duct; and although it normally disappears, vestiges may remain and give rise to symptoms varying from slight discomfort to intestinal obstruction. The following case is an unusually complete example of the various characteristics of the condition.

A. B., aged 10 years, came to my out-patient department complaining of a dermatitic condition of the skin round the umbilicus. His statement was that this started three weeks ago, and was due to a "kick in the stomach" when swimming in the baths with some other boys. His mother stated that his cord was very thick at birth and difficult to heal, requiring cauterisation. For the first six years of his life he had complained at times of vague abdominal pains in the region of his umbilicus, but he never had any nausea or vomiting, and there was no difficulty in feeding him in infancy. From six to ten years of age he had had no trouble whatever until this eczematous condition of the skin started round the umbilicus.



On examination the umbilicus was found to be retracted, and a dirty brownish-yellow discharge exuded from it, causing the eczematous condition of the skin. No symptoms of interference with the bowels were present, and nothing could be felt on palpation. I put on a broad Elastoplast bandage over the umbilicus and told the boy to report in two days. When I took the elastoplast off about half an ounce of dirty yellowish fluid came from the umbilicus, homogeneous in character, with no flakes or granules in it. I repeated this, and a larger quantity came out the second time; accordingly I decided to admit him to the ward and explore, expecting to find a patent urachus. On August 21st, 1934, I explored by an elliptical incision so as to remove the umbilicus and whatever was attached to it, and found the following condition. Running from the ileum up to the umbilicus was a well-marked Meckel's diverticulum. (See Figure.) This arose almost close to the mesenteric border of the ileum, and its lumen was the same as that of the ileum. It was 4¾ inches long and attached to the umbilicus. For the first 3 inches from the ileum the lumen was patent; then about ½ inch fibrous tissue supervened; this, again, opened out into a cavity 1¼ inches in diameter, which communicated by a small opening into the umbilicus. On splitting this cystic end open I found it lined with mucous membrane; to all outward appearance it looked like a piece of duodenum or jejunum, with rugæ secreting fluid which was being discharged through the small sinus into the umbilicus. This diverticulum had a mesentery of its own, attached to the mesentery of the bowel, and along the free edge of this mesentery ran an omphalo-mesenteric artery the size of a fairly large quill. This was attached to the umbilicus at one end, and ran out into the mesentery of the ileum. Also attached to the umbilicus and running down the right side was a large urachus, patent up to within 2 inches of the umbilicus.

The usual operation was done with a Kocher's clamp, and the diverticulum was treated as an appendix and sunk by a continuous Lembert suture. The abdomen was closed and the boy made an uninterrupted recovery.

The chief points of note in this case are: (1) there were no signs or symptoms of obstruction or interference with the bowel at any time; (2) the part of the bowel next the umbilicus, and shut off from the intestinal part of the diverticulum, was actively secreting fluid which caused the irritative dermatitis; (3) this seemed to have been stirred to life by the kick in the abdomen; (4) the Meckel's diverticulum, with its mesentery complete, and the omphalo-mesenteric artery and the urachus were all conspicuous and present together.

FURTHER NOTES ON THE LABORATORY USE OF SCREW-CAPPED BOTTLES

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Details of the use of screw-capped bottles in the preparation and storage of culture media, for blood culture bottles, and as a substitute for test-tubes have previously been described by one of us.[1,2] These methods have proved very satisfactory; the following further uses will be of assistance, particularly for routine use in pathological laboratories.

"*BIOCHEMICAL BOTTLES*"

For the various routine biochemical methods, several kinds of anticoagulants or preservatives are mixed with the blood according to the examination required—e.g., potassium oxalate, sodium fluoride, and sodium citrate. In order to ensure that the correct anticoagulant is used, and in the proper amount, small screw-capped bottles, with painted tops and covered with a Viskap, are used. The bottles employed are the 1 oz. screw-capped vials H. 53 previously described [2] and fitted with a perforated cap and rubber washer, as used for the blood culture bottles.[1] The same aluminium cap also fits the 4 oz. and 6 oz. medical flats. The blood is added to the bottle by puncturing the rubber washer like a vaccine bottle.

Method.—The caps discarded from the bottles used for media are utilised. They are placed in weak lysol which not only sterilises them from any culture organisms, but softens the white paint on them so that it is easily rubbed off. The liners are removed and the caps washed and dried. A hole ¼ in. in diameter is punched out of the cap and a red rubber washer 2 mm. thick is fitted. To the sterile H. 53 bottles the correct amount of anticoagulant is added, a perforated cap is screwed on, and the top painted with cellulose paint according to the following scheme, which has been standardised :—

Anticoagulant and amount.	Colour of top.	Test.
Sod. fluoride 10 parts Thymol .. 1 part } 0·1 g.	Red.	Blood-sugar.
Pot. oxalate 0·25 c.cm. (4 drops) 20 per cent. (evaporated)	Blue.	Blood-urea.
Sod. citrate, 20 per cent., 4 drops.	Purple.	,,
Mixed fluoride and oxalate, 0·5 c.cm.* (evaporated).	Yellow.	Blood-sugar. Blood-urea.† Non-protein nitrogen.
None—plain empty bottle ..	White.	Where ordinary serum required—e.g., Widal, Wassermann. blood calcium, &c.
Glass beads, 3 mm. diameter	White.	For defibrinated blood.

* Pot. oxalate .. .. .. 3 g.
Sod. fluoride .. .. .. 4 g.
Distilled water .. .. 100 c.cm.

† Fluoride prevents the use of the urease method.

With the potassium oxalate and mixed fluoride-oxalate the solution is placed in the bottle, which is rotated so that the fluid moistens most of the interior, and then placed in the hot-air oven (coolest shelf) to dry. When the bottles are removed and cooled, the cap is screwed on.

With the plain bottle and bottle with beads, new caps are used because they are already painted white when received. When the cellulose paint is dry (30 minutes) a transparent viskap (No. 2, cut 1½ in.) is placed over the cap and allowed to dry. In doing so, it shrinks and moulds itself to the shape of the top of the bottle.

Use.—A red, blue or purple-capped bottle is used according to the test required. The viskap should not be removed. The top of the viskap is wiped with a little methylated spirit which is allowed to dry. Blood is withdrawn from a vein into a syringe in the usual manner. The needle is then plunged through the viskap and washer, and the blood squirted into the bottle. The needle is withdrawn, and the bottle gently rotated until the anticoagulant is dissolved. The top is wiped with a little spirit before being sent to the laboratory.

The advantages of this method are : the bottles can always be kept in readiness ; being sealed there is nothing to deteriorate ; neither can fluid (e.g., citrate solution) evaporate ; the bottles are easily identified by the nursing staff ; the intact viskap shows the pathologist that the bottles have not been opened, and that the contained anticoagulant has not been emptied out or spilt. From the colour of the cap the pathologist can tell at once if the correct bottle has been used for the test required ; thus, if he received a blue cap (oxalate) and the request form asks for blood calcium he will not waste his time proceeding with the test. The bottle with beads is useful for defibrinated blood in the malaria treatment of general paralysis.

Many thousands of these bottles have been distributed throughout the Council's laboratories and have proved extremely useful.

FOR ANAEROBIC CULTURES

The bottles (substitutes for test-tubes) containing culture media are fitted with perforated caps and rubber washers as above when the medium is sterilised, and a supply of such bottles should always be available. Being "canned" the contents will not evaporate or deteriorate, but will keep indefinitely. Alternatively a supply of sterile perforated caps may be kept and used as required.

After the medium has been inoculated the perforated cap is screwed on tightly. A hypodermic needle (No. 22 SWG) is fitted to a piece of pressure tubing, the other end of which is connected to a Geryck pump. The needle is plunged through the rubber washer and the pump started. After a few strokes the air will be entirely exhausted and the needle is withdrawn. The puncture in the rubber is self-sealing, and the vacuum will be maintained for many months. Tests taken when the tube was opened under water three months after exhaustion showed that an almost perfect vacuum had been maintained, there being only a tiny bubble of gas in the bottle. If it is desired to introduce any gas such as CO_2, or a mixture of gas (e.g., CO_2 and air) for *Brucella abortus* cultures, it is only necessary to connect a hypodermic needle to the supply, pierce the rubber washer, and allow the gas to enter. Usually we do not admit any gas after exhaustion, and we have found this method extremely simple and reliable. It is useful for the recognition of *B. welchii* in milk cultures. Any gas evolved is "absorbed" by the vacuum, and no bursting of containers or spilling of liquid will occur. The cultures in the small bottles on solid culture media can frequently be used for isolating anaerobes without recourse to Petri dishes. Where a number of bottles are being exhausted it is advisable to keep the Geryck pump working all the time and have a pinch-cock on the pressure tubing to the needle. The washer is pierced, the pinch-cock opened and exhaustion proceeds, the pinch-cock is closed and the needle withdrawn. This method gives a satisfactory vacuum in a few seconds.

References.—1. McCartney, J. E. : THE LANCET, 1931, i., 583. 2. McCartney : Ibid., 1933, ii., 433.

A CASE OF UTERUS DIDELPHYS

ASSOCIATED WITH HÆMATOCOLPOS OF THE RIGHT VAGINA AND SIMULATING APPENDICITIS

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THE following case seems worthy of record not only in view of the difficulty in diagnosing it but also because uterus duplex separatis is rarely seen in living women, being normally associated with other malformations of the pelvis that are incompatible with life.

The patient, a girl of 12½ years, complained of severe dysmenorrhœa, tenderness of the abdomen, and vomiting. On examination she was found to have a temperature of 100° F. and a pulse of 100. There was definite abdominal tenderness, more marked on the right side ; she had already had three monthly periods, somewhat profuse, and the present one had started the day before and was excessive. Rectal examination disclosed a low pelvic tumour about the size of a grapefruit.

As the diagnosis was not clear an examination under an anæsthetic was performed on the following day. The patient was put in the lithotomy position ; hæmatocolpos was found on the right side, the septum bulging towards the left. The left vagina was carefully dilated and a separate cervix found, which was functioning normally. The septum was therefore dissected away, followed by the flow of from 6 to 8 ounces of dark black blood. A few catgut stitches were inserted through the fold of mucous membrane between the two cervices to stop the hæmorrhage, and the fluid was allowed to drain slowly away. The patient made an uninterrupted recovery.

Thirteen years after this operation I had occasion to examine the patient again under an anæsthetic, partly because she was still suffering from occasional dysmenorrhœa and some menorrhagia, and partly because there was a question of a possible marriage. On this occasion I found a wide vagina, two cervices, and the remains of the base of the vaginal septum; the right cervix was caught up to the right wall, the left being more central, and the uterus felt broader than usual. The left cervical canal admitted the uterine sound with ease, the length of the cavity being 6 cm. I dilated the canal up to No. 9 Hegar, and took some curettings for examination. The right cervix only admitted the sound for 4 cm., and no curettings were obtainable. The pathological report on the curettings from the left side was that "the uterine endometrium showed some areas of interstitial hæmorrhage, possibly due to the curettage."

The difficulty in diagnosis is of some interest. The fact that there had been three normal periods made one hesitate to diagnose hæmatocolpos; the pyrexia and definite right abdominal tenderness and pain and the vomiting suggested appendicitis. A blood count was not done, but, even had it been, a leucocytosis would have been compatible with both a hæmatocolpos and an appendicitis. The patient is a normal girl in every other way.

REVIEWS AND NOTICES OF BOOKS

Surgical Diseases of the Chest

By Evarts Ambrose Graham, A.B., M.D., F.A.C.S., Professor of Surgery, Washington University School of Medicine; Jacob Jesse Singer, M.D., F.A.C.P., Associate Professor of Clinical Medicine to the School; and Harry C. Ballon, M.D., C.M., F.A.C.S., formerly Assistant Professor of Surgery to the School. London: Henry Kimpton. 1935. Pp. 1070. 65*s*.

The surgery of the chest is advancing so rapidly that, as the authors say, it is inevitable that some of the opinions expressed in any comprehensive work on the subject should already be out of date at the time of its publication. This work is unusually up to date in most places and only a specialist would detect the others. The material is treated authoritatively and each chapter is followed by a full and classified bibliography. The subjects described include everything that has ever been surgically treated in the chest from the cardiac valves and the œsophagus to the bones forming the thoracic cage. Certain chapters are outstanding. The one on bronchiectasis, for example, begins with an informative discussion of modern views on the ætiology of this condition and ends with a well-balanced review of the benefits that may be expected from various operative measures and the risks attendant on each. To the section of the book which deals with pulmonary tuberculosis Dr. R. C. Matson contributes a chapter on adhesion cutting in which he shows a preference for his own method of diathermy as opposed to the original Jacobæus electrocautery technique. An excellent chapter on oleothorax, its uses and limitations, was written by the late Dr. R. W. Matson, who unfortunately did not live to see the publication of the book. The chapter on the surgical treatment of pulmonary tuberculosis contains a full summary of the indications and contra-indications of thoracoplasty; the two-stage operation appears to be the one most commonly performed but reference is made to the recent tendency to make use of more than two stages. Phrenicectomy, in the authors' opinion, is often performed unnecessarily; although a most useful operation in cases in which paralysis of the diaphragm will be followed by limitation of movement, little or no benefit can be expected when the lung is already fibrotic and the diaphragm fixed. Phrenicectomy should not therefore be considered a necessary preliminary to thoracoplasty. The book concludes with a chapter on the chest service at the Barnes Hospital. St. Louis. The building is designed to provide small well-ventilated wards, each communicating with a balcony and placed conveniently near the operating theatre and X ray department. The facilities for treatment provided thus combine the advantages of a modern surgical hospital with those of a sanatorium.

For the advanced student this will be a valuable book of reference as it contains multifarious information, clearly arranged, which could not otherwise be obtained without laborious search amongst original articles in many languages. Illustrations, largely skiagrams, are plentiful and clearly reproduced.

A Text-book of Biochemistry

Edited by Benjamin Harrow, Ph.D., Associate Professor of Chemistry, New York City College; and Carl P. Sherwin, M.D., Sc.D., Dr.P.H., LL.D., Member of the Staff of St. Vincent's Hospital and French Hospital, New York. London: W. B. Saunders Company. 1935. Pp. 797. 25*s*.

Not very many years ago a student wishing for a text-book on biochemistry had great difficulty in finding one in the English language. To-day he is faced with a choice ranging from small elementary books to large and comprehensive volumes. Happily most of these books are good, though they differ widely in the mode of presentation of the subject, according to whether the author is mainly interested in biochemistry from the purely chemical point of view, or whether he approaches it from a physiological, physical, or pathological aspect. Prof. Harrow and Dr. Sherwin have attempted to avoid this restricted outlook by securing the collaboration of over 30 contributors, including several British workers. The book covers the field of biochemistry. On the whole the sections dealing with the purely chemical side of the subject are the best, and of these the chapter on carbohydrates deserves special mention in that it will bring the reader's knowledge on this complex subject right up to date. The section on the sterols, bile acids, and related compounds is rather disappointing, especially in view of the great advances that have been made recently. The author would have been well advised to go into more detail regarding the chemical evidence for the Rosenheim-King formula for cholesterol, since it is upon this groundwork that the whole of our present knowledge, not only of the bile acids and cholesterol, but also of the sex hormones and of certain vitamins depends. A very valuable chapter is that on the vitamins. In only 40 pages the author has succeeded in giving one of the clearest accounts that is to be found in the literature to-day of the present position. The historical introduction is really excellent; it enables the reader to follow the steps that have led to the establishment of the existence of vitamins and the various methods of separation, and finally the determination of their constitution.

An interesting account is given of immunochemistry, giving prominence to the work of Landsteiner and his fellows. The author of the section on oxidations and reductions has tackled the subject in a fundamental manner and it is possible to see the foundations upon which the modern mathematical conception of oxidation-reduction indicators rests. The account of the hormones has been condensed unduly. Only 20 pages are devoted to this important branch of biochemistry and the historical introduction is definitely misleading. Thus the history of the internal secretory properties of the thyroid contains no mention of the names of Gull, Ord, Horsley, or Murray; it is surely a mistake to repeat in modern text-books the fallacious experiments of Brown-Séquard, and in any case, it is unfair to state that he "founded the science of organo-therapy."

The work as a whole is very good indeed, being both accurate and clear. The references are well selected and we commend the book to anyone requiring either a readable text-book or a not too compendious work of reference.

Diseases of the Heart

Third edition. By John Cowan, B.A., M.D., D.Sc., F.R.F.P.S., sometime Professor of Medicine, Anderson College of Medicine; Consulting Physician, Royal Infirmary, Glasgow; and W. T. Ritchie, O.B.E., M.D., F.R.C.P.E., F.R.S.E., Professor of Medicine and Clinical Medicine, Edinburgh University; Physician to the Royal Infirmary and Director of the Medical Unit of the Municipal Hospitals, Edinburgh. With a chapter on the Ocular Manifestations of Arterial Disease by Arthur J. Ballantyne, M.D., F.R.F.P.S., Lecturer on Ophthalmology, University of Glasgow. London: Edward Arnold and Co. 1935. Pp. 631. 30*s*.

In this new edition the text has been almost entirely rewritten, and much new matter has been included without an appreciable increase in the size of the book or alteration of its character. It is essentially an exposition of the authors' own experience and teaching in cardiology, presented in attractive and readable form.

The chapters dealing with disturbances of rhythm form one of the best sections of the book. The subject is treated comprehensively, yet essentially from the clinical aspect, and all unnecessary technicalities have been avoided. Many illustrative graphic records are included, the attached legends being clear and self-explanatory. In the nomenclature of electrocardiograms of bundle-branch block the authors have not adopted the newest terminology, but they have wisely avoided confusion by abandoning altogether the designations "right" and "left."

No particular plan has been followed in the arrangement of the subject matter and the sequence of the chapters is somewhat haphazard. Rheumatic, syphilitic, and congenital heart disease are separately considered, but arterio-sclerotic heart disease is discussed under various headings, little attention is paid to the heart in hypertension, while the thyrotoxic heart is scarcely described.

The section entitled Diseases of the Arteries is open to criticism. Arterio-sclerosis is defined as a diffuse affection of the arterial tree caused by high blood pressure, and the term arterio-sclerosis is frequently used in the text when hypertension is under discussion. This is likely to prove both confusing and irritating to those accustomed to modern terminology. The statement (p. 559) that digitalis is usually injurious in cases of arterio-sclerosis with hear failure will probably astonish many readers. In the chapter on treatment, more information might, with advantage, have been given about the use of mercurial diuretics such as Salyrgan, which represent the greatest advance in the therapy of heart failure since digitalis was introduced.

Having made some minor criticisms, we must pay tribute to the book as a whole. For a volume of moderate size, it contains an extraordinary amount of information. Statistics based on analysis of the authors' own cases are to be found in all sections of the book, and should prove an invaluable source of reference. The illustrations deserve especial praise; they are almost all original, are beautifully reproduced, and add greatly to the interest of the book. Compared with the last edition, the paper has been improved and, instead of references inserted as footnotes, a serviceable bibliography is appended to the text.

Dictionary of Applied Chemistry

Supplement, Vol. II., N–Z. By Jocelyn Field Thorpe, C.B.E., D.Sc., F.R.S., F.I.C., Professor of Organic Chemistry and Director of Organic Laboratories, Imperial College of Science and Technology; and M. A. Whiteley, O.B.E., D.Sc., F.I.C., formerly Assistant Professor of Organic Chemistry to the College. London: Longmans, Green and Co., Ltd. 1935. Pp. 727. 60*s*.

In compiling the three supplementary volumes—the first of which, covering A to M, was noticed in our issue of March 23rd of this year—the editors have assumed that the inquirer has access to the main work, which appeared ten years ago. Some of the articles in the supplementary volumes deal separately with work done during the last decade; others, and these are the most useful, are really monographs on the present state of chemical knowledge in the particular subject with which they deal. The articles on petroleum, photography, radiology, and spectroscopy, and the classified description of the more recent synthetic medical products are of especial interest, but all through the volume are short notes on things that touch medicine closely, such as protein degradation products, thallium, toad venom, vitamins, which the investigator or research worker will overlook at his peril. The publication of the third volume, which will provide a glossary and a comprehensive index to the supplementary volumes, will restore the full value of Thorpe's Dictionary as an up-to-date guide to applied chemistry.

Some Thoughts of a Doctor

Revised edition. By F. Parkes Weber, M.A., M.D., F.R.C.P., F.S.A. With a Preface by Sir W. Langdon Brown, M.A., M.D., F.R.C.P. London: H. K. Lewis and Co. Ltd. 1935. Pp. 184. 6*s*.

Within the compass of 184 pages Dr. Parkes Weber has written 31 essays and papers on various subjects which he has thought about from time to time. He has something to say on eugenics, on free-will (which he regards as a precious endowment found only in small quantity and in few persons), on the gambling spirit and on nightmares, to pick out only four of the things which have interested him. Throughout he writes modestly and often with humour. The result is a provocative and stimulating book. The contemplative reader, whether agreeing or not with Dr. Weber's views, will admire his scholarship, balance, and essential kindliness of outlook.

Konstitution und Tuberkulose im Kindesalter

By Dr. KURT KLARE, Ärztlicher Direktor der Prinzregent-Leutpold-Kinderheilstatte-Scheidegg. Leipzig: Georg Thieme. 1935. Pp. 42. M.4.

THIS question of seed and soil in tuberculosis is, as the author remarks, of long standing, running as a thread through the whole history of the subject. To the old masters of medicine the habitus phthisicus was the all-important factor. Then came the discovery of the tubercle bacillus and opinion swung to the other side. Now the time has come for assessment and correlation of the two points of view. Dr. Klare interprets the word constitution broadly, so as to include not only man's habitus and his physiological functions, but also his reactions to life and his psyche. Various constitutional factors as they affect tuberculosis in childhood are discussed in turn: the endocrine glands, the effects of puberty, the resistance of the lymphatic system, and so on. Two well-known types of tuberculous child, the hectic-looking, bright-eyed, alert type, and the soft, flabby, dull one are described. These discussions occupy the first 18 pages—i.e., rather less than half of the monograph. The remainder is devoted to a description of cases illustrating various types, with photographs of the children, radiograms, blood counts, and case-histories. The subject is an attractive one, and Dr. Klare leaves the reader with a desire to explore it further.

A Text-book of Histology

Sixth edition. By HARVEY ERNEST JORDAN, A.M., Ph.D., Professor of Histology and Embryology, University of Virginia. London and New York: D. Appleton-Century Company, Inc. 1934. Pp. 738. 30s.

THE chief alterations which have been made in this text-book are in its external appearances. The paper and binding are considerably heavier than in the former editions, and the whole book is enlarged as well as increased in price. A few revisions have been made in the text, the most extensive of which are in the sections dealing with the blood and reticulo-endothelial system. Some new illustrations have been added, but otherwise the general plan of the former editions has been maintained.

Human Physiology

Second edition. By F. R. WINTON, M.D., Reader in Physiology, University of Cambridge; and L. E. BAYLISS, Ph.D., Lecturer in Biophysics, University of Edinburgh. London: J. and A. Churchill Ltd. 1935. Pp. 627. 15s.

THERE are few satisfactory text-books of physiology of this convenient size, because it is difficult to dissociate brevity from a popular type of treatment on the one hand, and a mere cataloguing of facts on the other. In this work the explanations are, for the most part, clear and logical, and the diagrams have been selected from a wide field of original papers; very few of them are of the schematic type, and many convey additional information to the discerning reader. In fact, perhaps the most striking feature of this book is the care with which the illustrations have been chosen and the way in which they amplify the text. The student is presented with a reasonably short account of each subject, but he is brought into contact with the actual experiments which have been made, and does *not* feel that his intelligence has been under-estimated. This edition is a great improvement on its predecessor, much new work having been introduced and some mistakes and inconsistencies in the text eliminated. The authors have drawn freely on the experience of experts in different branches of the subject, and several of the sections have actually been written by them. The book is well up to date, containing the first "text-book accounts" of several recent researches; all sections show evidence of revision; and a useful guide to the literature is supplied at the end.

The book can confidently be recommended to students with no more reservation than that they may have to do a certain amount of additional reading.

Die Behandlung der Knochenbrüche durch den praktischen Arzt

Second edition. By Geh. Hofrat Prof. Dr. FRITZ LANGE. Munich: J. F. Lehmann. 1934. Pp. 142. M.4.20.

THIS small volume has been written with the object of assisting the doctor who has to treat fractures in general practice, without the advantages of specially designed apparatus and opportunities for applying the more modern methods of traction and splinting. Dr. Lange has been impressed with the unsuitability of most of the methods taught to the student when he comes to work in the patient's home, at a distance from special clinics. He considers that the plaster-of-Paris technique is of much more value to the ordinary doctor than are methods of skeletal traction, and describes in detail his special technique and its application to all the ordinary fractures. He applies the plaster, not as does Böhler, directly to the unshaven skin, but over a varying amount of padding. All the important bony points are protected by pads of felt or some other material. Ladders, chairs, and cupboards are most *ingeniously* called into service in slinging limbs during the application of the plaster splint; and temporary extension is obtained by the use of buckets of water, the weight of which can, of course, be easily regulated.

As this book is likely to be widely read, it is worth correcting a misstatement contained in it. Referring to the mortality from fracture of the femur in the late war, and the effect on this mortality of methods of transportation, Dr. Lange states that the mortality in the German army from these injuries was 51·5 per cent. This figure, he says, though serious enough, might have been worse, as the English and French mortality, at the beginning, amounted to 80–90 per cent. The entrance of the Americans into the war, with their better orthopædic technique and their introduction of the use of the Thomas's splint, had, according to Dr. Lange, the effect of reducing this mortality to 5 to 10 per cent. The facts are that Sir Robert Jones urged the adoption of the Thomas's splint for transport on the field as early as 1914; that in 1916 considerable numbers of cases were already reaching the casualty clearing stations put up in this splint; and, according to Major Meurice Sinclair ("Fractures," London, 1931) who was in charge of one of the special fractured femur hospitals in France, that the mortality from compound fractures of the femur, which in 1915 was 80 per cent., had been *reduced to 15 per cent. by the following year*, the change being largely due to the "early, efficient, and continuous" use of the Thomas's splint.

The book is well illustrated and very practical, and should be assured of popularity.

THE LANCET

LONDON: SATURDAY, JUNE 15, 1935

THE MEDICAL CURRICULUM

WE publish this week in substance, with the resolutions in full, the report of the special committee of the General Medical Council on the revision of the medical curriculum. The committee was appointed about a year ago to consider various information and proposals received by the Council, certainly over some considerable period, which had for their object the improvement of the educational course; and the Council adopted the report, receiving it as an interim document, and decided that it should be circulated to the licensing bodies and to the deans of medical schools for their observations, when the whole matter will be considered further by the Council at the next session in November, 1935. The profession therefore has not before it a definitive document, but one that records the opinions of the committee in the form of resolutions which are to receive further consideration from bodies and persons directly concerned in the translation of opinions into action, while the views of the different educational authorities have again to undergo scrutiny by the Council as a whole before actual measures of reform will result.

The report confirms the accuracy of much of the criticism of the curriculum which has been rife for many years, although in places the committee indicate where criticism appears to have been ill-founded, certain popular assumptions being made without any, or any complete, warrant. They hold that the fundamental system of our medical education and the methods of its conduct are sound, and that by comparison with the standards of qualification prevailing in other countries our own system is good, and that its improvement can be best advanced by developing and re-shaping it. They find the length of the curriculum, the subjects required, and the order in which they are studied, to need no alteration, and they look towards a more economical use of the statutory period of five years, together with an improved standard at entrance, to remove many objections that have been urged by different authorities and educational centres against some of the present regulations, or, rather, against some of the results that have followed upon their observance. The plea for a shorter educational course, implying the creation of a class of practitioner trained to deal with the routine and emergencies of general practice, receives no mention; the committee have, of course, perceived that any attempt in that direction would be fraught with peril, if only because definition of what such a course should be is impossible. They have had in mind how best to enable the student to cover the ground which modern medicine demands of its followers without extending the present term, and they look to economy in time, to avoidance of overlapping in the studies, and to team-work among the teachers to remove the more obvious defaults, while leaving the teachers with opportunities to give instruction along important lines which to-day are left aside. So far from regarding an abbreviation of the course as an answer to complaints of its severity and expense, the committee have replied to those who in effect are demanding its extension by suggesting how developments in scientific medicine can be met in the curriculum without increasing its length. At certain points more particular indications for reforms would have been welcome, but it must be remembered that the report is an interim one, and that the Council, while it represents all the centres of medical education in the country, has always felt it proper to leave each of those centres great individual discretion as to their methods and domestic work. We may expect from the centres detailed information following upon the general recommendations submitted to them.

An example of where more definite opinion would have been valuable is found in the section referring to biology. Included among the preliminary scientific subjects it none the less cannot or does not receive attention in many of the secondary schools. It has therefore also to be a subject in the medical curriculum proper, and is very rightly placed there in the committee's scheme. But in the resolutions with regard to instruction in anatomy and physiology no special place seems to be allotted to any course in biology as such. Instruction in the subject before registration cannot be made compulsory upon students who have had no opportunities of obtaining the necessary training, but how the untrained student is to make up his deficiency is not alluded to. Information from some of the training centres may assist here in meeting a difficulty. The keeping of the training of students in the same year identical is so convenient that no other procedure can be contemplated, yet with regard to biology the beginners do not start from a common mark. This may seem a small point, but in view of many developments in scientific medicine, it is one worth attention. The general view is endorsed that regular instruction in applied anatomy and physiology should be carried on during the period of clinical studies, and under the instruction of clinical as well as special teachers, an opinion to which the recent report (see THE LANCET, May 18th, p. 1161), being the issue of a conference between representatives of the universities of Oxford, Cambridge, London, and the English licensing bodies, gave particular effect by proposing the formation of a joint board of teachers dealing with the ancillary subjects and pathology so that concerted action might be arrived at. At this point one opinion of the G.M.C. committee will not, we feel, receive general approval. They recommend, dealing with anatomy, that the whole body should be dissected, and many must regard this as unnecessary, and an anomalous suggestion when time is to be found for bringing anatomy into relation with clinical medicine, as is so rightly proposed. That special dissections accompanying research will be made as a matter of course at a later stage by those who are working along special lines is obvious; but remembering the opportunities which the student now possesses for seeing without actually dissecting the details of much anatomical structure, we think that dissection of the whole body is needless, and that many teachers of anatomy will agree with that view. From these teachers definite counsel may be derived as to how the range of their subject can be modified so that needless burdening of memory is avoided and more time found for the acquisition of fundamental knowledge equally useful in future stages of the curriculum and in professional practice. And when the student is bringing the knowledge that he has acquired of anatomy, physiology, and chemistry, under its three headings, to his assistance in the study of pathology, it might be well that pathology should be considered from a rather different angle than that suggested by the report. Pathology is the science of diseased processes on which clinical medicine must be based, while the words of the report imply that clinical medicine is as yet divorced from this science. The words used are meant, probably, to convey that the pathologist instead of concentrating on morbid anatomy should develop his science until it has become an integral and necessary part of clinical medicine. But surely that is what he is doing.

The analysis of the curriculum as given in the report is beautifully clear. Many of the general recommendations for its improvement are those that have been made, some of them over and over again, but they gain force by the endorsement of the central educational authority. Two new recommendations, if acted upon, would render the first stages of professional life far less perplexing to the young doctor while making his services of markedly greater value to the community. It is to be hoped that they will receive support from the various educational centres, as to carry them into effect may not be universally easy. We are referring here to the necessity of the student residing for a certain period within an institution while he is undergoing the later stages of his training, and to the proposal that after qualification he should hold a resident appointment. Both procedures have been advocated in many quarters, and the first is to some extent in actual action; the advocacy of the G.M.C. will be warmly approved. Other passages in the report which point to useful developments in the student's training are the recommendations that the curriculum should include more organised instruction in such subjects as child welfare, pædiatrics, psychology, and radiology. All will recognise that a certain knowledge of the fundamentals of such matters is to-day necessary for the practitioner's equipment.

THE HEALTH AND DIET OF THE SCHOOLBOY

IN most modern resident schools for children of all ages food is provided in ample quantity, though the distribution over the day is sometimes open to criticism, and the proportion of protein, especially first-class protein, to carbohydrate and fat is still often regrettably low. There seems to be an impression among parents that in general boys at preparatory schools are well fed and that the tradition of public schools permits a much lower standard in quality and variety, as well as in cooking and service of meals. The supplementary hamper from home, however, which used to be accepted as almost a necessity, has now become an agreeable incident in many schools, and in some, we understand, is even forbidden. There can be no doubt of the general physical improvement which has followed the greater attention devoted to diet in schools, and not in this country alone. By a careful statistical analysis of the measurements of school-children in Berlin, Dr. GEORG WOLFF has clearly shown that both the school entrants and school leavers in that city have substantially improved in their height and weight over the nine years 1924 to 1932.[1] A similar improvement is to be seen in the English schoolboy according to the extensive observations published by Dr. G. E. FRIEND, the medical officer of Christ's Hospital, Horsham, whose records of growth and diet are more detailed than any previously issued in this country.[2] For instance, in his experience, boys aged 14½–15½ years in the school year 1928–29 were 10 pounds heavier and just over an inch taller than boys of the same ages in 1919–20, while boys of 9½–10½ years were 4 pounds heavier and one-fifth of an inch taller in the later year than their predecessors of 1919–20.

The study of these measurements, analysed under the direction of Prof. MAJOR GREENWOOD, Dr. FRIEND supplements with a detailed inquiry into the diet provided in the school over a period of 20 years, 1913 to 1933, and with a clinical survey made over the same period. Dividing the 20 years into four sections, the food consumption, the physical measurements, and the incidence of disease can be correlated in an interesting manner. In the years 1916–22 there was an average calorific intake of 2780, but the proportion of first-class to second-class protein was relatively low, while, in comparison with previous years, there was a reduction in the proportion of animal fat consumed, and a substitution was made of margarine for butter. During this period the average heights and weights were below the estimated pre-war values (exact pre-war measurements are not available) but, on the other hand, the general health of the boys was good except for a higher incidence of rheumatic affections than in subsequent years. The incidence of fractures was also relatively high in these years. The average number of fractures per year was 6 in 1914–17, 14 in 1918–22, and again 6 in the 11 years 1923–33. The most serious diet deficiences in the middle period were the limitations of the milk-supply and the replacement of butter by margarine, which leads Dr. FRIEND to conclude that the greater fragility of the bones was probably due to a shortage of bone-forming minerals and a deficiency in the supply of fat-soluble vitamins. It would be interesting to know whether this time-sequence of fractures has been observed in other schools. In the last period, 1927–33, the diet has the comparatively high average calorific intake of 3014, derived from 397 g. of carbohydrate, 92 g. of protein, and 108 g. of fat. Larger amounts of butter and milk are now included, the amount of bread has declined but that of sugar has increased. The diet is a generous and well-balanced one but apart from the relatively low incidence of rheumatism, already referred to, the sickness records show surprisingly little variation though, as stated, the physical measurements have much improved.

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[1] THE LANCET, April 27th, 1935, p. 1006.

[2] The Schoolboy; a Study of his Nutrition, Physical Development and Health. Cambridge: W. Heffer and Sons, Ltd. 1935. Pp. 128. 7s. 6d.

The incidence of colds, fevers of unknown origin, and chills does not appear to be in any way clearly related to changes in the diet, while influenza and the incidence of complications arising from it have increased under the conditions of improved diet. Septic conditions —e.g., boils, impetigo—have also shown a somewhat higher level in the most recent years, and may, Dr. FRIEND suggests, be related to the rising sugar consumption. This is one of the many interesting observations of his study which show the desirability of further investigation on the lines he has adopted. Dr. FRIEND also stresses the value of his records of physical measurements as a clinical aid to the school medical officer. Any boy who is seen to be failing to keep his normal rate of progress is detected, often long before he himself would have reported sick. A failure to show a satisfactory increase in height is usually found to signify little, whilst regression in weight may or may not be important. Regression in the chest grade or in any two grades at the same date is held to indicate an immediate need for inquiry. The most reliable results have been obtained by the use of "time-increment" tables which show weight, height, and chest grades for every six months of age. Dr. FRIEND gives his tables in full and individual examples of their use, and this aspect of his work deserves particular consideration.

A NEW POISONS CODE

THE Pharmacy and Poisons Act, 1933, provided for the formation of a Poisons Board which should be required to prepare a list of substances to be treated as poisons under the Act. This list is referred to in the Act as the "Poisons List." The Act also empowered the Home Secretary, after consultation with the Poisons Board or on its recommendation, to make rules relating to poisons. These rules are termed the "Poisons Rules." The Board held its first meeting in December, 1933, and has now, after many committees and subcommittees, published its report,[1] which contains the Poisons List and the Poisons Rules. The constitution of the Board, to which we have recently alluded,[2] enabled it, with the help of Mr. M. D. PERRINS of the Home Office to whom tribute is paid, to perform a task of considerable difficulty—nothing less than the construction of a new code to replace existing legislation. It was wisely decided that the new code should resemble the present restrictions, but be freed from their defects, and the Board submitted a first draft of provisional proposals to the organisations likely to be affected. The draft received wide publicity in trade journals and was circulated to the police forces. As a result of this extensive consultation many of the original proposals were substantially modified. Its chief function the Board construed to be the utmost reasonable protection of the public from the danger of death or injury from criminal or accidental poisoning. It had to bear in mind the problem of suicidal poisoning, but it was unwilling to include a substance in the Poisons List merely because it might be used as a means of self-destruction, if it carried no real danger of accidental or criminal poisoning. Aspirin is quoted in the report as an illustration. Statistics show that during the period 1925 to 1933 there were 106 fatalities attributed to the taking by suicides of large over-doses of aspirin; it would be unreasonable on this account to schedule aspirin as a poison. Protection of the would-be suicide from himself is beyond the power of legislation; apart from poisoning there are other easily available modes of death.

In the construction of the Poisons List much difficulty was encountered in regard to nomenclature. There has never been a satisfactory definition of the term "poison" upon which to base restrictions; the popular definitions are all either too narrow or too wide for legal use. The report in fact admits that for practical purposes the word is indefinable. Many toxic substances in the list gave trouble to indicate precisely. The list is made as descriptive as possible, terms such as preparations, admixtures, and derivatives being avoided. It contains the well-known older poisons and also many substances of comparatively recent introduction. In Part I. are to be found the dinitrophenols and dinitrocresols which have recently aroused interest as metabolic stimulants. The more powerful endocrine products are represented by insulin and the principles of the thyroid, pituitary, and suprarenal glands. The barbiturates are listed in a short but comprehensively definitive two dozen words. The Board was divided in opinion about the inclusion of Lysol in Part I., and its retention was the outcome of a vote; the reasons actuating the majority and minority are set forth in the report.

The Poisons Rules concern the regulation of the sale and supply of poisons. The power behind them arises from Section 23 of the 1933 Act which allows them to modify the provisions by both anatomy, that the whole body should be dissected, and many must regard this as unnecessary, and an anomalous suggestion when time is to be found for bringing anatomy into relation with clinical medicine, as is so rightly proposed. That special dissections accompanying research will be made as a matter of course at a later stage by those who are working along special lines is obvious; but remembering the opportunities which the student now possesses for seeing without actually dissecting the details of much anatomical structure, we think that dissection of the whole body is needless, and that many teachers of anatomy will agree with that view. From these teachers definite counsel may be derived as to how the range of their subject can be modified so that needless burdening of memory is avoided and more time found for the acquisition of fundamental knowledge equally useful in future stages of the curriculum and in professional practice. And when the student is bringing the knowledge that he has acquired of anatomy, physiology, and chemistry, under its three headings, to his assistance in the study of pathology, it might be well that pathology should be considered from a rather different angle than that suggested by the report. Pathology is the science of diseased processes on which clinical medicine must be based, while the words of the report imply that clinical medicine is as yet divorced from this science. The words used are meant, probably, to convey that the pathologist instead of concentrating on morbid anatomy should develop his science until it has become an integral and necessary part of clinical medicine. But surely that is what he is doing.

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[1] Home Office: Report of the Poisons Board. Cmd. 4912. H.M. Stationery Office. Pp. 62. 1s.

[2] THE LANCET, Feb. 2nd, p. 278.

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A LETTER, influentially signed, will be found on a later page calling serious attention to a modest organisation on whose efforts there has followed widespread activity, but which are for the moment embarrassed for want of funds. Communications of this sort are too apt to be looked at askance from the outset owing to the large demands made. A big sum is named, usually to be raised by some capitation fee to be received voluntarily from the mass of the medical profession, and at once the probable failure of the request for subscriptions is seen. Here only immediate need is pleaded, and that is so comparatively small that it ought to be met at once. The International Campaign against Rheumatism was formed in London ten years ago as a league, with the blessing of the Ministry of Health. A conference at which France, Holland, Denmark, Switzerland, Roumania, and this country were represented, resulted in the setting up of a central international council whose duty it should be to distribute the facts and arouse the general conscience to the evils that follow conditions generically termed rheumatism, and to the possibility of abating those evils by organised effort. The *Acta Rheumatologica*, a periodical in three languages, was produced and widely circulated and a small central bureau and library were opened. Important international congresses were arranged with the help of national committees and with the support of representatives of the countries most seriously affected, and in this way examination of many outstanding problems related to rheumatism has been conducted. The expenses so far incurred at the bureau and for the production of the journal, the *Acta Rheumatologica*, have been discharged by personal subscriptions and by contributions from the national groups. But the latter source has largely dried up under the economic conditions under which the world is abiding. It is in the nature of a shock to learn that this policy of abstention has been pursued in this country, which, embarrassed as it may be, cannot plead a position comparable to that existent in the other countries which have hitherto supported the movement. A sum of £1000 is all that is required in the present emergency, while a guaranteed annual subscription of some similar sum would enable the League to pursue efforts which have already been of high practical value. We feel that, when the situation so clearly set out in the letter referred to is realised, the obvious remedy should follow.

PREGNANCY TOXÆMIA UNDER CONTROL

AUTHORITATIVE statements as to how far antenatal supervision can prevent deaths from pregnancy toxæmia are few and far between. It is useful therefore to have a report from Falls [1] on his experience of 500 cases of eclamptogenic toxæmia seen at the universities of Illinois and Iowa over a period of twelve years. While the series is relatively small, it has the advantages of being accumulated under the personal supervision of one man and under one system of treatment. The prenatal care given was simple but thorough, consisting chiefly in examination of blood pressure and urine twice a week from the 28th week onwards. The treatment of the toxæmia itself was orthodox; in the fulminating cases pregnancy was terminated by Cæsarean section, and in others by induction of labour. Such procedures as intravenous injection of magnesium sulphate or glucose were not considered essential. There were only two deaths; indeed, so low was the incidence of eclampsia that Falls almost bewails the fact that he was unable to demonstrate the treatment of this condition to his students once in two years. On the other hand he can congratulate himself on having reduced the mortality in his cases of pregnancy toxæmia to the usual level of mortality among pregnant women in general. That such results are obtainable has often been emphasised in this country, but the rigorous antenatal supervision that should be the rule is still too often neglected, and apathy and indifference are regrettably common.

THE ROME HOSPITAL CONGRESS

THE fourth international congress of hospitals, held in Rome from May 19th to 26th, did some serious work in spite of the distractions of the Eternal City. Six hundred delegates represented 47 nations. The first subject on the agenda was one of the most important, being the hospital as a link in a systematic public health chain, and Dr. J. L. Brownlie's paper, of which we published an abstract last week (he was unfortunately unable to be present) showed where the Scottish health authority is aiming. Later in the congress Dr. A. F. Cooney, who with two colleagues represented the Irish Hospitals Commission, dealt with the cognate subject of the importance of the hospital staff in relation to the community. Hitherto, he said, the advice of the hospital had usually been sought for illness. Now the public health authorities are coming to seek its aid in the prevention and preventive treatment of disease, a change with which hospital policy must reckon. Dr. W. Alter of Syracuse, opening a discussion on the out-patient department, insisted that it should include occupational therapy. The restoration and assurance of the patient's power to work at his calling must, he said, never be lost sight of and never be prejudiced by false romantic views as to light and air. "His occupation should only be changed when it is unavoidable"—a remark in singular harmony with recent correspondence in our own columns. Dr. T. J. Heldt, of Detroit (Mich.), surprised the congress with his assertion that in the addition and subtraction or relaxation of regulations. This section also provided for the regulation of the storage and transport of poisons, and of the containers in which poisons may be sold or supplied; for the manufacture of pharmaceutical preparations containing poisons and for prohibiting the retail sale of poisons except upon a prescription given by a qualified medical, dental, or veterinary practitioner. Hitherto all these matters have been uncontrolled. At every point the motive of restriction is the prevention of criminal or accidental poisoning. In regard to accident, emphasis is laid upon the fact that the principal object of control is to ensure that persons handling poisons are made aware that they are doing so, either by means of a cautionary label or by markings on the container, or by its shape. The rules do almost all that can be done by legislation in this respect, but they cannot guard against want of care or gumption in the home which is the point of greatest danger. The common foolishness of keeping poisons about the house in ordinary bottles and not under lock and key is deplored in the report. One of the saddest features of this form of folly is the toll it takes in the lives of little children, as was pointed out by AIKMAN[3] in a recent paper setting out his experience in America; in the United States more than 500 deaths from acute poisonings (gas excepted) occur yearly in children under five years of age.

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[1] Falls, F. H.: Amer. Jour. Obst. and Gyn., March, 1935, p. 316.

An important proposal in the rules is designed to abolish the medley of types of so-called poison bottles. It is proposed that the standard bottle shall have its outer surface fluted vertically with ribs or grooves recognisable by touch. The report discloses a feeling among several members of the Board that in regard to certain medicines, notably barbiturates, there should be compulsion to label with the word "poison" or to warn the patient against disregard of prescribed directions. After consideration however it was decided to be inadvisable to depart from the established custom whereby the information given on the container of a medicine does not disclose the name or character of its ingredients—since it is not always desirable that the patient should be cognisant of the nature of the medicament prescribed. The rules include special provisions for the storage and dispensing of poisons in hospitals. These regulations have been anticipated by local rules in the majority of hospitals, but in those where conditions are lax they will serve as a timely and necessary compulsion. Particular importance is attached to the routine inspection by a responsible officer of the poison stores and poison cupboards.

The report is the result of much work in a difficult legislative field. It is clear, and as concise as is compatible with the complexity of its subject. Its object has been to replace existing legislation, criticised by the Departmental Committee as a "patchwork of provisions," and it may be held to have fulfilled this aim.

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[3] Aikman, J.: Jour. Amer. Med. Assoc., 1934, ciii., 640.

ANNOTATIONS

MINOR AILMENTS OF LONDON WATER

LAST week in room 4 of the London Government Exhibition at the County Hall was staged the story of how the Metropolitan Water Board ensures a safe supply of drinking water. By an appropriate coincidence this year is the golden jubilee of the regular bacteriological examination of the water-supply of London. This was initiated by Percy Frankland, who adopted Koch's then new plating method for the numerical examination of micro-organisms. The aim of water examination was, he held, to find out if a water is contaminated with sewage. The next advance was the utilisation of *B. coli* as an index of pollution, in America by Theobald Smith, in this country by Klein, in whose laboratory Mervyn Gordon and Houston worked. Gordon studied the *coli* group and classified its varieties; Houston stressed the value of quantitative tests and worked out provisional standards. When he was appointed director he was using a glucose primary medium, the disadvantage being that it required seven days for completion. Then followed the quintuple preferential *B. coli* test, by means of which results were obtained in from three to four days. Finally, in 1928, a presumptive test of the quantitative presence of unconfirmed *B. coli* was adopted, by which tentative information could be acquired in 18 hours and confirmed as above. So much for the detection of dangerous contamination, now under the control of Lieut.-Colonel C. H. H. Harold, M.D. One of his exhibits dealt with the non-bacterial growths in water which although not dangerous to life are a source of perplexity to the water engineer and sometimes of annoyance to the consumer. In August, 1929, Houston wrote a personal letter to a large number of consumers. "I am sorry," he said, "not to have been able to write to you sooner to express my sincere regrets at the inconvenience caused you by the taste of the water supplied to your house. . . . The trouble, due to the decay of harmless vegetable matters, has now been completely overcome, and I feel sure will not recur." The trouble was the growth of an alga, in this case the tufted variety of oscillaria, masses of which had been blown by south-east winds into the outlet of the Island Barn reservoir, and were carried down the main on to the Surbiton works. It was necessary to scour a 54-inch raw-water main, a costly and unpleasant job, and to clean the filter-beds. This is an example of the kind of trouble which has arisen from time to time in river water both from the Thames and the Lee, sometimes the trouble brings complaints of taste from the consumers, but usually simple mechanical clogging of the filters results with greatly added costs of bed cleaning against time and the difficulty of maintaining an adequate supply. In the matter of taste Houston's own feeling was that river-derived waters always have a taste, except perhaps during certain months. People used to say to him, "I like the taste of London water better than any water I have tasted elsewhere." Many algal growths in the reservoirs although capable of taste production may never give rise to a single complaint from consumers. Houston made many experiments to discover remedial measures, but without immediate success. For taste removal he found chlorination useless, and aeration at all events under laboratory conditions proved futile. Treatment with permanganate was also disappointing, except in the case of tabellaria, but ozone and activated carbon—in popular language "super-charcoal"—were generally effective. For algal control additions of 0·1 to 0·5 parts per million of copper sulphate have given fair results, but recently a combination of copper, ammonia and chlorine, named for convenience coprichloramine, has proved to be a more effective algicide. Added to the raw water before it reaches the reservoirs the algæ are killed and sink to the bottom; although without visible means of locomotion they are able while living to remain suspended in water against the effect of gravity. The superiority of cuprichloramine appears to reside in the penetrating property of ammonia which then brings into effect the toxic actions of copper and chlorine, and it would appear quite uncertain whether the liberation of oxygen by chlorine has any lethal effect. The presence, amongst the exhibits, of cuprammonium, which by dilution and chlorination is converted into cuprichloramine, is one of many illustrations of the march of progress, and of the continuous care exercised by the Metropolitan Water Board in the interests of the consumer.

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A LETTER, influentially signed, will be found on a later page calling serious attention to a modest organisation on whose efforts there has followed widespread activity, but which are for the moment embarrassed for want of funds. Communications of this sort are too apt to be looked at askance from the outset owing to the large demands made. A big sum is named, usually to be raised by some capitation fee to be received voluntarily from the mass of the medical profession, and at once the probable failure of the request for subscriptions is seen. Here only immediate need is pleaded, and that is so comparatively small that it ought to be met at once. The International Campaign against Rheumatism was formed in London ten years ago as a league, with the blessing of the Ministry of Health. A conference at which France, Holland, Denmark, Switzerland, Roumania, and this country were represented, resulted in the setting up of a central international council whose duty it should be to distribute the facts and arouse the general conscience to the evils that follow conditions generically termed rheumatism, and to the possibility of abating those evils by organised effort. The *Acta Rheumatologica*, a periodical in three languages, was produced and widely circulated and a small central bureau and library were opened. Important international congresses were arranged with the help of national committees and with the support of representatives of the countries most seriously affected, and in this way examination of many outstanding problems related to rheumatism has been conducted. The expenses so far incurred at the bureau and for the production of the journal, the *Acta Rheumatologica*, have been discharged by personal subscriptions and by contributions from the national groups. But the latter source has largely dried up under the economic conditions under which the world is abiding. It is in the nature of a shock to learn that this policy of abstention has been pursued in this country, which, embarrassed as it may be, cannot plead a position comparable to that existent in the other countries which have hitherto supported the movement. A sum of £1000 is all that is required in the present emergency, while a guaranteed annual subscription of some similar sum would enable the League to pursue efforts which have already been of high practical value. We feel that, when the situation so clearly set out in the letter referred to is realised, the obvious remedy should follow.

PREGNANCY TOXÆMIA UNDER CONTROL

AUTHORITATIVE statements as to how far antenatal supervision can prevent deaths from pregnancy toxæmia are few and far between. It is useful therefore to have a report from Falls [1] on his experience of 500 cases of eclamptogenic toxæmia seen at the universities of Illinois and Iowa over a period of twelve years. While the series is relatively small, it has the advantages of being accumulated under the personal supervision of one man and under one system of treatment. The prenatal care given was simple but thorough, consisting chiefly in examination of blood pressure and urine twice a week from the 28th week onwards. The treatment of the toxæmia itself was orthodox; in the fulminating cases pregnancy was terminated by Cæsarean section, and in others by induction of labour. Such procedures as intravenous injection of magnesium sulphate or glucose were not considered essential. There were only two deaths; indeed, so low was the incidence of eclampsia that Falls almost bewails the fact that he was unable to demonstrate the treatment of this condition to his students once in two years. On the other hand he can congratulate himself on having reduced the mortality in his cases of pregnancy toxæmia to the usual level of mortality among pregnant women in general. That such results are obtainable has often been emphasised in this country, but the rigorous antenatal supervision that should be the rule is still too often neglected, and apathy and indifference are regrettably common.

THE ROME HOSPITAL CONGRESS

THE fourth international congress of hospitals, held in Rome from May 19th to 26th, did some serious work in spite of the distractions of the Eternal City. Six hundred delegates represented 47 nations. The first subject on the agenda was one of the most important, being the hospital as a link in a systematic public health chain, and Dr. J. L. Brownlie's paper, of which we published an abstract last week (he was unfortunately unable to be present) showed where the Scottish health authority is aiming. Later in the congress Dr. A. F. Cooney, who with two colleagues represented the Irish Hospitals Commission, dealt with the cognate subject of the importance of the hospital staff in relation to the community. Hitherto, he said, the advice of the hospital had usually been sought for illness. Now the public health authorities are coming to seek its aid in the prevention and preventive treatment of disease, a change with which hospital policy must reckon. Dr. W. Alter of Syracuse, opening a discussion on the out-patient department, insisted that it should include occupational therapy. The restoration and assurance of the patient's power to work at his calling must, he said, never be lost sight of and never be prejudiced by false romantic views as to light and air. "His occupation should only be changed when it is unavoidable"—a remark in singular harmony with recent correspondence in our own columns. Dr. T. J. Heldt, of Detroit (Mich.), surprised the congress with his assertion that in the

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[1] Falls, F. H.: Amer. Jour. Obst. and Gyn., March, 1935, p. 316.

U.S.A. the nervous and mental patient required hospital service greater than that of all other patients put together. There were in round numbers a million hospital beds in the States, and last year a fifth, he said, of all these beds were occupied by patients suffering from one mental disease alone, namely, dementia præcox. He made the shrewd suggestion that this was very likely true of other nations. Some idea of the scope of the congress and of the work of its preparatory subcommittees can be gained in the current issue (January–April, 1935) of the quarterly hospital review *Nosokomeion.* A popular feature of the congress was the exhibition of model of hospitals in Italy, the Italian delegates being anxious to show that Italy is not behind any country in both construction and equipment. There is, it seems, abundant material for international discussion at these gatherings without dissipating power in fruitless controversy. Thus, at the suggestion of Pope Pius XI. the subject of contraception was deleted from the agenda of the congress, and on a motion by a group of Dutch physicians a discussion on sterilisation was excluded from the programme of a particular session. On the other hand Capt. J. E. Stone, secretary of the Birmingham Hospitals Centre, had the satisfaction of getting his system of hospital accountancy adopted in principle. The International Hospital Association will now advise hospitals all over the world to show their expenditure classified under various headings. And then for the first time useful comparisons can be made. The congress was followed by a sight-seeing tour to Naples and Sicily.

ATEBRIN MUSONATE IN MALARIA

MUCH has been said in the lay press about the successful use of Atebrin musonate during the malaria epidemic in Ceylon, and it is interesting to see the first serious medical report on the effects of this new soluble preparation of atebrin. Dr. J. R. Blaze and Dr. A. T. W. Simeons[1] describe it as the atebrin salt of musonic acid—a yellow powder, readily soluble in water, and supplied in dry ampoules each containing 0·125 g. Each dose is dissolved in 3 c.cm. water for intramuscular or intravenous injection, and the amount suggested for intramuscular use is one to three ampoules, and for intravenous injection one ampoule. Of their 21 cases (mostly of subtertian type) 8 had a single intramuscular injection of 0·3 g.; 9 had two injections on successive days, some intramuscularly and others intravenously; and the other 4 had oral atebrin as well. The paper is illustrated with 21 charts, and it is clear that they represent the clinical effects of this treatment: in some the temperature dropped immediately; in others there are two, three, and sometimes four subsequent attacks of pyrexia, as might be expected. Similar charts, however, can be obtained with intramuscular quinine, or may even be paralleled in cases receiving no treatment at all. What we really require therefore is evidence of the effect upon the parasite, and here Blaze and Simeons's paper is again rather unsatisfactory. A single injection of 0·375 g. atebrin musonate is followed by temporary disappearance of the parasite, but this was not always seen in heavy malignant infections. Two injections of the same dose, given on two successive days, seem to control the temperature within 48 hours and to cause disappearance of both forms of parasite within four days; but crescents (gametocytes) do not appear to be influenced in any way. In some cases the ring form of the parasite reappears within a few days, but it is said that they disappear again spontaneously. On the whole it is thought that the intravenous route, though harmless, is less satisfactory than the intramuscular. Blaze and Simeons are satisfied with the immediate results of the treatment; but they agree that the period of observation has not been long enough for a comparison of the relapse rate of atebrin musonate with that of oral atebrin or quinine. It is hardly conceivable, with this evidence in front of us, that a massive malaria infection can be entirely eliminated from the body by means of two comparatively small injections of this admittedly potent antimalarial drug. The histories of all other protozoal blood infections suggest that much more prolonged and intensive therapy will prove necessary. It is a relief, however, to know that this new method is comparatively harmless and has no disagreeable effects.

INTRAVENOUS PITUITRIN IN OBSTETRICS

THE popularity of pituitrin in obstetric practice has varied during the last two decades. In most patients its administration leads to a fairly uniform increase in the number and strength of the uterine contractions, but sometimes this increase does not take place and the uterus goes into spasmodic contraction or the patient rapidly enters into a state of profound surgical shock. Smaller doses and slower administration have been shown to lessen the risk of both these complications, and accordingly it is surprising to find Baron[1] of Montreal recommending intravenous injection, albeit in minute doses. Zorn in 1926 first described this method, and maintained that quantities as great as 0·25 c.cm. were safe. Baron advises doses of one minim, and reports that when the drug was thus used to aid induction of labour following rupture of the membranes, the first contraction appeared soon, lasted about six minutes, and after an interval of 20–30 seconds was followed by a second lasting two to three minutes. This in turn was succeeded by good strong and regular pains in all but 1 of 55 cases. The drug was also used in this manner with success in 9 cases of "tired uterus," and in 15 cases the low application of the forceps was obviated. Clearly the outstanding advantage of this method is its certainty of action. But the series of cases reported is too small to carry much conviction and by no means proves it free from the danger of pituitary shock or rupture of the uterus.

MINISTERS OF HEALTH

THE reconstitution of the Cabinet last week has sent Sir E. Hilton Young to the House of Lords and filled his place at the Ministry of Health by Sir Kingsley Wood. Nine years ago Sir Hilton was nominated by the Crown as the first layman ever to sit on the General Medical Council, and for more than four years he placed his many gifts and attainments at its disposal. It is on record that in asking for more Crown nominations to the Council a Member of the House of Commons took it for granted that "one layman could not possible fill his rôle adequately if alone amongst 37 other medical members." Sir Hilton filled his rôle at the Council's board, and for three years as a member of the executive, in a way which did much both to increase the confidence of the public in the General Medical Council and to procure the respect of his medical colleagues. He resigned from the Council on becoming Minister of Health and this three and a half years' tenure of this office have witnessed a revolution in public health practice, for a new standard of housing has been set up providing for the separation of the sexes over ten years of age and space for the increasing family, while a date has been fixed after which it will become an offence for either landlord or occupier to overcrowd a house in excess of its legal standard. By arduous tours through the country Sir Hilton came personally into contact with the medical officers of health on whom the execution of this programme will so largely rest, and now it will fall to his successor to see the scheme for abolishing slums put through. But in the House of Lords Sir Hilton will find many opportunities of using his great knowledge of public health and his interest in the lives of the people.

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[1] Indian Med. Gaz., April, 1935, p. 185.

[1] Baron, H. A.: Jour. Obstet. and Gyn. Brit. Emp., April, 1935, p. 322.

Sir Kingsley Wood, who leaves the post office to be Minister of Health, is no stranger to the department, for he served as Parliamentary Secretary some years ago. He has another practical qualification for the insurance side of the work, since he was one of the original members of the London Insurance Committee, and became its chairman for the year 1917–18, receiving the honour of knighthood during his year of office. Sir Kingsley is a solicitor and his firm has for many years been associated with one of the largest industrial approved societies. In the early days of the scheme he paid special attention to the problem of the adequacy of the medical service for the insured population in London, and sanatorium benefit, which at that time was administered by insurance committees, also received his intensive consideration.

SPEED LIMIT FOR DOCTOR'S CAR USED AS AMBULANCE

MEDICAL practitioners, along with all other motorists, are being summoned for exceeding the speed limit of 30 miles per hour imposed by the Road Traffic Act of last year. A doctor who said he was hurrying to an urgent maternity case found the magistrates in a lenient mood. Where a patient is being taken in emergency to surgery or hospital by motor-car, there is a possible exemption under Section 3 of the Act. In somewhat verbose language the section declares that the provisions of any enactment, statutory rule or order which impose a speed limit shall not apply to any vehicle on an occasion when it is being used for fire brigade, ambulance, or police purposes, if the observance of those provisions would be likely to hinder the use of the vehicle for the purpose for which it is being used on that occasion. Last April a doctor arranged to drive a patient of hers to a maternity home as soon as necessary. She was sent for one day and, as soon as she saw the patient, she realised it was an urgent case. She had to drive 12 miles to the home, and in traversing a built-up area she was said to have travelled between 38 and 40 miles an hour over six-tenths of a mile. For this the Tunbridge Wells magistrates fined her £2. She appealed to the West Kent Appeals Committee—i.e., to quarter sessions. Police witnesses said that the saving of time by the excess speed was only one minute. On the other side, it was proved that the patient's medical adviser had pronounced the case to be one of great urgency, that the patient had to be assisted from the car on arrival, and that the child was born within an hour of the mother being admitted to the home. In the mother's condition, it was said, any further time in the car would have precipitated matters. The Appeals Committee allowed the appeal and, although the decision of quarter sessions upon a particular set of facts is not as weighty as a ruling by the High Court, the result is a useful precedent. To come within the exemption of Section 3 the car must be "used for ambulance purposes," and the case must be one where reduction of speed to 30 miles would hinder those purposes. The best rate of speed to minimise the jolting of an injured patient is a question which the magistrates might need expert evidence to decide.

THE BLINDING FILARIA IN EAST AFRICA

ONCHOCERCIASIS has appeared in East Africa and there is little doubt that it is taking the blinding form whose devastating effects in the Belgian Congo and the Sudan were noted in our issue of June 1st. P. G. Preston has reported [1] from Kenya onchocerca nodules, steadily increasing for two years and proved to be such by microscopic examination after excision. They were taken from a man who, except for service as a porter in the King's African Rifles near Kilimanjaro during the late war, had always lived in the Kisii Reserve. From time to time he had suffered from pain as if a knife were thrust behind the eyes, with periodic blurring of the vision, which latterly seems to have become permanent. Preston believes this to have been the first case of onchocerciasis microscopically identified in Kenya. Further, A. J. Boase [2] reports from Uganda the case of a Muganda with ciliary congestion, posterior synechiæ, and a hazy cornea through which the fundus could not be seen; the corneal microscope revealed microfilariæ judged to be a third of a millimetre long. The man had *Mf. perstans* in the blood, but the size of the corneal microfilariæ was that of the larvæ of *Onchocerca volvulus* and not of *Acanthocheilonema perstans*, while the ocular condition corresponded to that produced by onchocerca. There is thus grave reason to fear that East Africa is threatened with an encroachment by the blinding filaria.

LEGACIES AND GIFTS FROM PATIENTS

"No practitioner is safe against becoming involved in costly litigation arising out of his practice" is a well-worn sentence in the report of the Council to the general meeting, held last Wednesday, of the members of the London and Counties Medical Protection Society. It is a statement which hardly needs making to members of such a society, but one to which heed should at once be given by those—now happily few—who have not joined one of the societies formed to protect their interests. The report contains much to show how watchful is the council of this society over the old recurring difficulties of professional life and the new difficulties which are constantly arising. A fortnight ago (p. 1296) we dealt with the claims against a deceased practitioner's estate opened up by a legislative Act of 1934. The report contains also a timely reference to the legal difficulties which may arise where a doctor accepts a gift from a patient. Their confidential relationship sets up a legal presumption of undue influence unless it can be shown that the patient received independent advice. Another point of the general law appears to be imperfectly appreciated. If a medical man is asked to witness the signature of a patient's will, his attestation makes void any legacy which the patient may have left to him. The law insists that, if the attesting witness (or his or her wife or husband) is the sole beneficiary under a will, then the will is invalidated altogether. If the witness (or his or her wife or husband) is only one of the beneficiaries under a will, then the will stands valid except as regards the benefit intended for the witness (or his or her wife or husband) while the latter benefit becomes, in the words of section 15 of the Wills Act of 1837, "utterly null and void." It is believed that these rules of law are not taught to medical students, and there is much value in the suggestion that such matters should be included, with other legal principles affecting professional relationships, in the curriculum of the medical schools. A practitioner is placed in an invidious position if he is called upon to rebut the legal presumption of "undue influence" when the executors of a deceased patient, in the course of their duty to the patient's estate, are obliged to challenge some gift made by the patient to his medical attendant several years earlier.

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[1] Jour. Trop. Med. and Hyg., 1935, xxxviii., 81.
[2] East African Med. Jour., 1935, xi., 326.

THE THYROID AND THE CIRCULATION

A BROAD survey of the contrasting circulatory changes in hyper- and hypothyroid states has been undertaken by F. Kisch.[1] In describing the tachycardia, increased minute volume of cardiac output, and increased speed of the circulation which are found in thyrotoxicosis, he is on ground where there is general agreement. But his account of the way in which the altered thyroid secretion brings about these changes seems to leave solid earth behind. After quoting experiments in support of the theory that the thyroid hormone exerts its influence on the heart only through the cardiac nerves, he suggests that the stimulus originates in the action of the thyroid secretion on the vegetative centres in the mid-brain. No definite explanation is offered for the occurrence of auricular fibrillation and flutter, but it is thought they may be due to "severe damage to the cardiac musculature." Against this is the strong objection that normal rhythm often returns within a day or two of thyroidectomy, which makes it seem that the change in the muscle is functional and not (as Kisch's phrase implies) organic. The latter part of the paper reviews the changes in the circulation in myxœdema. The statement that this condition occasionally causes gross circulatory failure has been seriously questioned since the introduction of complete thyroidectomy as a method of treating intractable heart failure; the artificial hypothyroidism thus produced has been shown to have a favourable effect on the symptoms of gross heart failure—even despite the further slowing of the circulation-rate and increase in the size of the heart.

MEDICINE IN BERKSHIRE

IN a modest preface the editors of the third volume of the *Royal Berkshire Hospital Reports* (10*s.* 6*d.*) explain that their aim is to record important cases observed in the hospital and to give to doctors in the area it serves particulars of the facilities offered for diagnosis or treatment. The outcome of their efforts is, however, of much more than local import, for not only are some of the individual cases of rare interest but the critical surveys of certain diseases—notably a review of 56 cases of anæmia admitted to the hospital between 1928 and 1934, by Dr. J. Mills and Dr. R. Herring, and a study of 71 consecutive operations on the thyroid gland by Mr. J. L. Joyce and Mr. F. H. Aitken Walker—chronicle experience which should find a permanent place in the literature of the subjects. The complete tables supplied by Mills and Herring, giving details of blood picture in each case at various dates as well as results of examination for biliary function, achlorhydria, achylia, and C.N.S. symptoms, provide records of great value in relation to the form of treatment given and the reticulocyte response. The general conclusions reached by these authors from their material were set out in their communication to THE LANCET three months ago; they emphasise (1) the advantages of the intramuscular route for liver therapy over the oral route and (2) the necessity for continuous treatment after recovery. The advice sometimes given "to have a rest from liver" is strongly condemned, and the desirability of the control of treatment by regular blood examinations is made clear. Mr. Joyce reports that of the 45 toxic cases in this goitre series 32 have been able to return to a normal active life, but the series shows an operative mortality (5 deaths) that the authors consider capable of improvement by earlier operation and closer coöperation between practitioner, physician, and surgeon. There are at the Royal Berkshire Hospital no facilities for estimation of basal metabolic rates and the authors hint at the desirability of the provision of these facilities. It seems justifiable to ask for them in a hospital which has installed such modern equipment as a deep X ray therapy plant and a clinic for the treatment of squint. The members of the staff in charge of these developments are respectively Dr. Paul Cave and Mr. G. T. Willoughby Cashell, each of whom contributes an article to the *Reports* discussing the scope of their work at the hospital. Other general articles include a review of some cardiac cases presenting features of interest, by Dr. Gordon Lambert; a discussion of the causes of loss of consciousness following acute head injury and their relation to the treatment of this condition, by Mr. R. Q. Parkes; a description, with comments, of four cases of brain abscess of otitic origin, by Mr. Leslie Powell; and a short analysis of the literature on peptic ulcer of Meckel's diverticulum, with two new cases, by Mr. Joyce. Of the individual cases the most remarkable is that described by the chief editor of the *Reports*, Dr. H. S. Le Marquand, with a pathological report by Dr. Dorothy Russell. In this case, on which we shall have occasion to comment, precocious puberty in a boy was associated with a tumour in the floor of the third ventricle.

That these *Reports* do not reflect an exceptionally fertile period but rather provide a fair sample of the normal activities of the hospital is clear to those who recall the quality of the work published in previous volumes (1932 and 1933). It is unusual that such good use is made of the clinical and pathological material available at a hospital not attached to a teaching school; it is even more rare to find team-work so well established as to enable its results to be collected and produced periodically with well-chosen illustrations in handy volumes.

SIR Frederick Banting, F.R.S., will deliver an informal address on the History of Insulin at the British Postgraduate Medical School, Ducane-road, London, W.12, on Thursday, June 20th, at 2 P.M. Medical practitioners are invited.

THE council of the Royal Society of Medicine on May 21st decided to make the first award of the Hickman medal to Dr. Wesley Bourne, anæsthetist to the Royal Victoria Hospital, Montreal, and lecturer in pharmacology at McGill University. Dr. Bourne paid visits to this country in 1926 and 1932, and has contributed to our columns pioneer observations on vinyl ether and cyclopropane anæsthesia.

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[1] Wien. Arch. f. inn. Med., February, 1935, p. 297.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LVI.—PROGNOSIS OF SIMPLE MOLES AND MELANOTIC SARCOMA

THIS article will attempt an answer to the following questions:—

1. What is the risk that a congenital pigmented mole may become malignant?
2. What are the factors that may increase the risk?
3. What is the outlook in untreated melanotic sarcoma?
4. What are the chances of cure in melanotic sarcoma?

The Simple Mole

Risk of malignancy.—There are few people who do not carry about from birth and through life one or more pigmented moles. On the other hand, melanotic sarcoma is a rare disease and so is squamous-celled carcinoma starting in a mole. It follows that the risk of malignancy in a simple mole is a small one. The chances against it are at least some thousands to one.

Factors favouring the onset of malignancy.—Chronic irritation, more rarely a single acute trauma, and unwise irritant treatment are the main causes of malignancy in moles. Moles subject by their situation to constant friction—for example, upon the neck where the collar rubs them, near the anus and upon the inner side of the thigh, or at the waist in women—are liable to malignancy. Undue exposure to sunlight may produce either melanotic sarcoma or epithelioma in a mole, and consequently these conditions are commoner in Australia than in this country. Queensland farmers have given up keeping white cattle because of their liability to cancer of the skin. In parti-coloured animals the cancer always develops on the white or unprotected portion of the hide.

Signs of threatened malignancy.—The signs which indicate the onset of malignancy in a mole are bleeding, increase of size, increase of prominence above the general surface, enlargement of glands, and they are unaccompanied by pain. Melanotic sarcoma is so rare that few men in practice have much experience of it. It follows that even if a patient with an active and threatening mole does seek advice early, he is liable to be met by reassurances, or the mole may be treated by the application of a caustic, an almost infallible method of inducing malignancy in a previously innocent mole.

Treatment.—Moles which are showing the signs of activity I have mentioned, or which are situated in regions where they are liable to irritation—e.g., the inner side of the thigh, the anal region, or the neck at the level of the collar—should not be merely watched, or irritated by ineffective treatment. They should be cut out with a small margin of ¼-in. of healthy skin and the incision sutured. The removal should expose the subcutaneous fat. The tissue removed should be microscopically examined in case by any chance malignancy has been overlooked, for it has to be remembered that the onset of malignancy in a mole is sometimes unaccompanied for a time by any striking alteration in the appearance of the mole. This is one of the difficulties of the subject, and should not be overlooked.

The manufacture of melanotic sarcoma from a mole by the application of a caustic is often due to the patient's initiative, but it must be confessed that more often his medical adviser is responsible. It cannot be stated too strongly that under no circumstances should a caustic be applied to a mole. The practice is not extinct, for recently I heard of a case in which a patient had undergone this treatment for a group of three moles. Other irritant forms of treatment such as the application of carbon-dioxide snow are almost equally dangerous, and so too is partial or careless excision or ligature. It is questionable whether even for the smallest mole diathermy or electrolysis is advisable. These agents are only safe if complete destruction at one sitting can be guaranteed. Methods of treatment of moles by caustics, partial excision, or ligature amount to experiments in the conversion of innocent into malignant tumours.

Melanotic Sarcoma

The outlook in untreated cases.—It is customary to speak of melanotic sarcoma as the most malignant of known tumours. It is certainly not the most rapidly fatal. The average duration of a case of melanotic sarcoma is about three years, and up to within a few months of the end the patient remains free from pain and able to get about. The factors producing disability are ulceration and hæmorrhage from the primary growth and its secondary deposits in the skin, great enlargement of the liver, and œdema and lymphatic weeping of a limb, the lymphatic vessels of which have been blocked by permeation. The spread of the disease takes place, mainly and at first exclusively, through the lymphatics, and the glands accordingly soon become enlarged. Blood-dissemination is a late event and may be absent nearly to the end. Accordingly melanuria is a late symptom.

Frequency.—Though melanotic sarcoma is fortunately a rare disease, it is not on that account to be neglected. I am indebted to Dr. Robert Greenough for the information that in the ten years 1917–26 inclusive 64 specimens of melanotic sarcoma were examined by the Diagnosis Service of the Massachusetts Department of Public Health. The population from which these specimens were derived numbers between three and four millions. Probably in only a minority of cases was a specimen sent for report, and rare though the disease is, the figures show that it deserves more careful attention from the profession than it has hitherto received.

Treatment.—Melanotic sarcoma has the reputation of being an inevitably fatal disease, for which surgical treatment offers at best a forlorn hope. There are various reasons for this pessimistic attitude. It is still generally thought that the growth obtains early access to the blood stream and spreads mainly if not entirely by the blood-vessels. If this were true, operative treatment is obviously useless, but as I showed many years ago, blood dissemination is a terminal, not an early event. The early stages of dissemination are by permeation of the lymphatic system around the primary growth, combined with lymphatic embolism of the corresponding set of glands. These glands form a barrier or filter which for some time arrests further the spread of the disease. Even at the time of death the distribution of the secondary deposits may be such as to show that they all arose from local centrifugal lymphatic spread. For instance, in a melanotic sarcoma of the hand the secondary growths were found only in the corresponding limb and the corresponding lung, all the rest of the body being free of the disease. All the evidence shows that the spread of the disease is at first local only, and that it should be amenable to surgical treatment.

Fifty years ago it was, I believe, quite usual to excise a carcinoma from the breast without removing the whole breast. The recurrence-rate at that time approached 100 per cent. Even as late as 1887 Mitchell Banks met with little support when he advocated the removal of the whole breast and the routine removal of the axillary glands. Since that time, as the result of pathological researches into the mode of spread of the disease, the operation for breast cancer has been gradually rationalised, and though many cases still reach the surgeon far too late, the results of treatment have improved enormously. At the present time 56 per cent. of cases treated on scientific lines remain free from recurrence three years after operation.

In respect to melanotic sarcoma, there is a very different and a very depressing story to tell. Even when melanotic sarcoma is recognised, it is often considered that a mere limited excision of the visible disease will meet the case, and no thought is given to its spread by permeation in the deep fascia, or to the probability that the lymphatic glands even if not enlarged may already be infected. The methods used are similar to those employed in breast cancer forty years ago. Since both diseases spread by early embolic invasion of the lymphatic glands and centrifugal permeation of the deep fascia, it is not surprising that the surgical results of excising melanotic sarcoma to-day approximate to those obtained in breast cancer in the primitive period, that is to say, the recurrence-rate verges on 100 per cent. Neither is it surprising that melanotic sarcoma has the reputation of being perhaps the most malignant of tumours.

In these matters surgical methods have not kept pace with pathological knowledge. The mode of spread of melanotic sarcoma has been accurately studied and an operation which fulfils the requirements of pathology is surgically possible. It is necessarily a severe operation but not a dangerous one. The requirements are the removal of:—

1. A circle of skin at least 2 inches in diameter centred on the primary growth.
2. A circle of deep fascia 4 to 6 inches in diameter centred on the primary growth.
3. An area of muscle immediately beneath the primary growth.
4. A band of deep fascia carrying the trunk lymphatics from the primary growth to the nearest glands.
5. The set of lymphatic glands immediately above the primary growth, together with a circular area of deep fascia surrounding them, and likely to be permeated.
6. The set of glands immediately above the first set of glands, if these latter are obviously enlarged.
7. All these parts in one piece.

In pathological language the object of the operation is the removal intact of the permeated area of the lymphatic system, of the embolically invaded glands, and of the trunk lymphatics connecting them.

Results.—If melanotic sarcoma were treated on these lines there is no reason why our results should not be at least as good as those secured in breast cancer. When once blood dissemination has begun, I admit that no surgical operation is likely to be successful. But blood dissemination is a very late event, and in some cases of the disease it is almost absent nearly to the end.

I cannot produce much direct evidence that a scientifically planned operation for melanotic sarcoma will cure the disease, for rarely in my career have I had its treatment from the beginning. With about two exceptions all the cases seen by me have been recurrent cases in which a local excision or cauterisation of the primary growth has been followed by local recurrence and gland enlargement. Eight or ten cases in all, apart from hopelessly inoperable ones, have thus come under my care. Unpromising as was the material, I have had among these cases three successes. One of them died from cardiac disease without recurrence 18 years after operation, another was known to be well 3½ years after operation, when she was lost sight of, and a third patient remains well to-day.

Melanotic sarcoma has not the great importance of the commoner forms of malignant disease. But that is no reason why its treatment should still be conducted on the ineffective lines handed down from our forefathers and by methods which are relics of barbarism.

SAMPSON HANDLEY, M.S. Lond., F.R.C.S. Eng.,
Senior Surgeon to the Middlesex Hospital.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. H. H. Babington to *Pembroke* for R.N.B.

Surg. Lt.-Comdrs. E. E. Malone to *Victory* for R.N.B.; J. J. Keevil to *Royal Sovereign*, addl., and vice Brown, temp.; and D. R. F. Bertram to *Pembroke* for R.N.B.

Surg. Lts. B. S. Lewis and F. W. Chippindale to *Winchelsea*, L. G. Yendoll to *Victory* for R.N.B., and B. S. Lewis to *Cricket*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. C. Mason promoted to Surg. Lt.-Comdr.

Surg. Lts. J. L. Cox transferred from List 2 of the Severn Division to List 2 of the London Division, and A. W. Kendall to *Pembroke* for R.N. Hospital, Chatham.

E. J. S. Woolley entered as Proby. Surg. Lt. and attached to List 2 of the London Division; and R. E. King entered as Proby. Surg. Sub-Lt. and attached to List 2 of the Clyde Division.

ROYAL ARMY MEDICAL CORPS

Short Serv. Commissions.—The undermentioned Lts. to be Capts.: W. M. E. Anderson and H. B. Wright.

The undermentioned Lts. to be Capts.: R. H. Foster, F. E. Buckland, J. H. J. Crosse, D. T. Swift, J. Boyle, E. H. P. Lassen, I. Buchanan, A. L. Pennefather, J. S. Ruddell, and W. T. Bermingham.

REGULAR ARMY RESERVE OF OFFICERS

Maj. A. M. Benett, having attained the age limit of liability to recall, ceases to belong to the Res. of Offr.

TERRITORIAL ARMY

Capt. G. A. Macdonald resigns his commn.

C. E. Moorhead to be Lt.

ROYAL AIR FORCE

Flight Lt. C. J. S. O'Malley is promoted to the rank of Squadron Leader.

AUXILIARY AIR FORCE

No. 607 (County of Durham) (Bomber) Squadron: Flying Offr. D. A. Smith is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: P. R. Vakil, J. L. D. Yule, M. L. Dhawan, and B. S. Dhondy.

Capt. K. R. Sahgal to be Maj.

The undermentioned officers have vacated appts. in India:—

A.D.M.S.—Lt.-Col. F. Worthington, D.S.O., O.B.E., R.A.M.C.

D.A.D.M.S.—Lt.-Col. A. C. Macrae, I.M.S.

D.A.D.H.—Maj. W. W. S. Sharpe, R.A.M.C.

The undermentioned appts. have been made in India:—

D.A.D.M.S.—Lt.-Col. B. C. Ashton, I.M.S., and Maj. T. J. L. Thompson, M.C., R.A.M.C.

D.A.D.H.—Maj. T. Young, R.A.M.C.

Indian Medical Department.—Maj. (Sen. Asst. Surg.) H. J. J. Fordham retires.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL

REPORT OF THE CURRICULUM COMMITTEE

THE Curriculum Committee of the General Medical Council was appointed in June, 1934, to consider information and proposals received by the Council in respect of the revision of the curriculum. The members of the Committee were Dr. H. L. Tidy (chairman), Dr. J. B. Leathes, F.R.S., Prof. J. S. B. Stopford, F.R.S., Sir George Newman, Dr. H. G. Dain, Mr. L. P. Gamgee, F.R.C.S., Prof. R. J. Johnstone, F.R.C.S., with the president as an ex-officio member. The report, considered as an interim document, was presented to the Council on May 31st, and it was resolved that it should be circulated to the licensing bodies and the deans of the medical schools for their observations, when the whole matter would be further considered at the November session.

A full abstract of the recommendations forming the report follows with the resolutions given verbatim :—

I.—Admission and Registration

Before admission to the medical curriculum proper the present Resolutions of the Council require that a student shall have passed an examination in general education and an examination in preliminary scientific subjects, and should be registered as a medical student. The curriculum proper may be taken in general as commencing with the study of anatomy and physiology. Registration as a medical student by the Council takes place at this point, but not under the age of 17 years. The average age at registration is now about 18 years, and the Committee are in agreement with the opinion that the medical curriculum proper should not be entered upon before that age.

Registration of medical students is not mentioned in any of the Medical Acts, and could only be enforced by the Council if Parliamentary powers or general consent were obtained, but the Committee recommend that all the licensing bodies should be invited to decide to raise the age of admission to the curriculum proper to 18 years, and also to require registration.

GENERAL EDUCATION

The present policy of the Council is that the standard of general education should be at least equal to that of entry into other learned professions, and not below that of the matriculation examination of universities. The Committee are in agreement with the widely expressed desire that the general education required of the student should not cease at too early an age, and also that the present standard should be raised, and not only by the addition of further subjects.

It would be difficult to formulate a scheme capable of general application. Many boys and girls now take the school certificate about the age of 16 years, and having then decided to enter the medical profession, complete their study of the preliminary scientific subjects while still at school. They are thus in surroundings where they can continue the study of other subjects, and, we hope and believe, frequently do so. In such conditions there would be no great difficulty in arranging that a subsequent examination should be taken in one or two additional subjects of general education at a fairly high standard. Such an arrangement cannot, however, apply to all students, since the conditions under which the examinations in general education and preliminary scientific subjects are passed vary considerably under different licensing bodies and with individual students. The Committee are of opinion that if the principle be adopted, the licensing bodies will themselves most appropriately find the method of applying it to their own requirements. At the pre-registration examination, which at present consists of scientific subjects, one or two subjects of general education at an approved standard should also be taken.

PRELIMINARY SCIENTIFIC SUBJECTS

Many secondary schools are now well equipped for teaching the preliminary scientific subjects, especially chemistry and physics. As great expense has been incurred as a result of the Council's Resolutions of 1922, there would be hardships if any change in principle in regard to chemistry, physics, and biology should be made. The position varies greatly in different places, and some medical schools must continue to teach these subjects, and many prefer to do so.

Chemistry.—Much of inorganic chemistry possesses no special educational merit and is not of particular value in the medical sciences; the omission of such matter would enable both inorganic and organic chemistry to be taken in this elementary course and examination, and the Committee therefore recommend that the subject of chemistry should include both inorganic and organic chemistry. A student would thus pass about the age of 18 an examination which would satisfy the requirements of the Council in chemistry and physics, and enable him to enter on the curriculum proper without having before him any further examination in these subjects.

Biology at present is not commonly taught in secondary schools, even in many of those satisfactorily equipped for the teaching of chemistry and physics, although considerable advance is in progress as the result of the Council's Resolutions. They hold that knowledge of this subject is a valuable introduction to anatomy and physiology, and that instruction in biology should not cease at the end of the pre-registration period. The Committee recommend that it should be permissible, as at present, for the course of instruction to commence before, but that the examination should be taken after registration. They recommend that it should be regarded as the intention of the Council that instruction should continue into the period of the Professional Scientific Subjects, and that the examination should not be taken immediately after registration. Botany should be considered as included in biology.

II.—Medical Curriculum Proper

The subjects of the curriculum proper fall into two main groups and periods of study, the Professional Scientific Subjects occupying the first two years, and the Clinical Subjects occupying the final three years. The definite "block" which exists at present between these two periods has evoked numerous criticisms. A study of the Council's Resolutions and the Additional Resolutions shows that it was the intention that there should be an examinational block at this point, the object being that the student should not pass to the three clinical years until he had proved his knowledge in the Professional Scientific Subjects. Of this type of block there is no substantial criticism, and the Committee are of opinion that it should be maintained. It was plainly not the intention of the Council that the block should be concerned with instruction. The Resolutions and Additional Resolutions were framed so as to avoid this by providing for instruction in applied anatomy and physiology during the clinical years. But it is clear that such provisions are insufficient to achieve adequate correlation of the two groups. The student has no introduction to clinical studies in the first two years, and having passed the examination at this stage, he may hear little more of anatomy and physiology till he meets anatomy in the final surgical examination. There may be no effective correlation of the two groups of subjects and the student, having passed the examination, may forget details which should form the foundations of clinical teaching and knowledge.

The Committee recommend, first, that an introduction to clinical subjects should take place during the period of study of the Professional Scientific Subjects, and secondly, that organised instruction in applied anatomy and physiology should be continued during the Period of Clinical Studies.

A.—Period of Study for the Professional Scientific Subjects

The Committee endorse the common view that the total duration of the study of the Professional Scientific Subjects should remain at two academic years. But they hold the Council should approach the licensing bodies with a view to an increase of the length of the terms of study.

[The various subjects are then referred to separately.]

It was resolved that instruction in *biology* should continue during these two years, an examination to be held at some appreciable interval after registration, but that no special instruction or examination in *organic chemistry* would be required if it has been duly dealt with as a pre-registration subject.

Anatomy.—The Committee refer to criticisms, general and special, on the teaching of anatomy which suggest that the subject instead of being taught on a vocational basis is sometimes conducted on the assumption that all students are likely to become professional anatomists. These criticisms the Committee did not find substantiated with regard to all the teaching schools, and held that the matter was one for the internal administration of the various teaching bodies.

Physiology.—The criticisms of the teaching of physiology were found to be generally on the same lines as those on the teaching of *anatomy*, but less emphatic. Some critics hold that too much attention is paid to branches of physiology which are of little vocational value, while others suggest that modern physiological developments of practical importance are not sufficiently promptly incorporated in the teaching. The Committee are of opinion that physiology and clinical medicine should be brought into closer union by continuing the instruction in physiology into the clinical years and by the association of clinical teachers with the teaching of physiology.

The Committee accordingly recommend that the resolution with regard to anatomy and physiology should read as follows :—

> "*Human Anatomy and Human Physiology.* These courses should include : (1) dissection of the entire cadaver ; (2) anatomy of the living body ; (3) elements of human embryology ; (4) histology, cytology, and the principles of genetics ; (5) the principles of general physiology, the chemistry and physics of bodily functions studied as far as possible in the human subject ; (6) elements of normal psychology."

The Committee further recommend that the following resolution should be included in the resolutions applicable to the teaching both of medicine and of surgery in the Period of Clinical Studies :—

> "Regular instruction and demonstrations in applied anatomy and physiology during the Period of Clinical Studies, to be carried out by the teachers of anatomy and physiology and the clinical teachers jointly."

INTRODUCTION TO THE CLINICAL SUBJECTS

The Committee accept the view that the introduction to the Clinical Subjects should take place during this period, with the object of associating them with the Scientific Subjects as early and as closely as possible, but at the same time they consider that the efficient teaching of the Scientific Subjects must be properly safeguarded. Consequently they recommend that the introductory Clinical Subjects should be taught throughout, but not before, the second year, and that the amount of time allotted to them should not exceed one-third of the total time available in that year.

With these essential provisos, they recommend that the following subjects should form part of the curriculum for this period :—

(1) Elements of the methods of clinical-examination, including physical signs, the use of stethoscope, ophthalmoscope, &c., and the examination of body fluids (with demonstrations on living subjects, normal and abnormal); (2) an introduction to general pathology ; and (3) to *pharmacology*.

The Committee accept the view that a student should not pass to Clinical Studies until he has satisfied the examiners in the subjects of the first two years.

B.—Period of Clinical Studies

The clinical period should begin in the third year of the curriculum and occupy the third, fourth, and fifth years and following the foregoing recommendations the student should already possess some knowledge of elementary pathology and bacteriology.

[The Committee refer to certain general criticisms before passing to individual subjects.]

1. *Full Use of Time Available.*—The Committee demur to the length of the long vacation and other holidays, and hold that during the three calendar years of the clinical period instruction should be continuous with reasonable breaks and cessation of systematic lectures during the academic holidays. They recognise that all the licensing bodies cannot conform exactly to one rule, and suggest that the total period of time should be from 33 to 36 months.

2. *Teaching of Anatomy and Physiology.*—Regular instruction in applied anatomy and physiology should be carried on during this period jointly by teachers of these subjects and of the clinical subjects.

3. *Closer Contact of the Students with Patients.*—The Committee are of opinion that this could be best secured by a period of residence in hospital. In those teaching schools in which such residence is available at present, it is found that the students can be allowed valuable responsibility under satisfactory supervision. They recommend that there should be a period of not less than one month's residence in hospital, both in medicine and in surgery, and that the relevant resolution should read :—

> "A continuous period of not less than one month in residence in hospital or conveniently nearby, attached to medical (surgical) wards."

Together with the two months' residence as obstetrical pupil, this would ensure that every student would spend four months in residence. He would thus obtain closer contact with patients, more continuous observation, and more practical experience in responsibility previous to qualification.

4. *Minor Illnesses.*—All students should obtain instruction in minor illnesses and in early stages of disease. The Committee recommend the following

resolution, which is at present the requirement of many medical schools:—

"Regular attendance in a medical (surgical) out-patient or equivalent department for a period of three months."

They also recommend the following resolution in surgery:—

"Practical instruction in minor operative surgery on the living."

5. and 6. *Systematic Lectures and Methods of Clinical Teaching.*—The Committee formulate no definite resolutions on these subjects, leaving such matters to the discretion of the individual schools.

SUBJECTS IN THE PERIOD OF CLINICAL STUDIES

The Committee make the following recommendations under:—

1. MEDICINE

Clinical Clerkship.—It is recommended that the resolution should be altered to read: "A medical clinical clerkship in the hospital wards for a period of six months."

Disease in Infancy and Childhood.—The Committee accept the view that every student should have practical acquaintance with this subject, and recommend as a resolution: "A clinical clerkship for a period of not less than one month in a children's ward or hospital." It is found that the time can be provided without interference with other duties in the six months allotted to midwifery, infant hygiene, and diseases of women.

Methods of Treatment.—Knowledge of certain methods of treatment which are not included in the present resolutions is essential, and the Committee recommend the addition of the following resolution: "Instruction in methods of treatment, including (*a*) dietetics; (*b*) therapeutics and prescribing; (*c*) physiotherapy; (*d*) principles of nursing."

Special Subjects.—The Committee have carefully considered the criticisms of the teaching of those branches of medicine which are commonly referred to as Special Subjects, and they agree that such teaching is sometimes unnecessarily detailed. At the same time it is essential that students should be reasonably familiar with the principles of these branches. They recommend that the important subject of (1) child welfare should be added to those at present required, and they further recommend the addition of (2) psychology, and (3) radiology in its application to medicine.

The Committee recommend that the following should be added to the resolutions in this section: "The instruction in these branches of medicine should be directed to the attainment of such knowledge as to ensure familiarity with common conditions, their recognition and treatment, and the indications for consultation."

2. SURGERY

Clinical Dressership.—It is recommended that the resolution should be altered to "A surgical dressership in the hospital wards for a period of six months."

The Committee agree with the opinion that students during the period of dressership spend time unprofitably in the operating theatre. They recommend the addition of the following words as a note on the foregoing resolution: "During his period of surgical dressership a student should spend the greater part of his time at the bedside and in the out-patient department; and he should not be required to attend in the operating theatre unnecessarily."

Practical Instruction in Surgical Methods.—The Committee recommend that "physiotherapy" be substituted for "mechanotherapeutics" in this resolution.

They also recommend that resolutions should be adopted in surgery, as in medicine, with reference to a period of residence in hospital, a period of instruction in the out-patient department, and the teaching of special subjects.

To the special branches of surgery they recommend the addition of "disease in infancy and childhood," "radiology in its application to surgery," and "dental diseases."

3. MIDWIFERY, INFANT HYGIENE, AND DISEASES OF WOMEN

This section of the Resolutions has recently been carefully revised by the Council. Criticisms are in the main favourable, and the Committee consider that, apart from the insertion of provision for instruction in postnatal as well as antenatal care, only minor alterations are necessary.

4. PATHOLOGY

Advances in pathology have brought it continuously into closer touch with clinical medicine. The Committee are of opinion that this aspect should be more strongly emphasised than in the present resolutions.

They recommend that the resolution should be as follows: "Pathology and bacteriology. Courses of instruction throughout the period of clinical studies in (1) general and special pathology and morbid anatomy; (2) clinical and chemical pathology; (3) general and clinical bacteriology and immunology."

The Committee have given careful consideration to the question of attendance at autopsies. It has been suggested that a certain number of attendances should be required at the commencement of the Clinical Period, and a further number towards its termination, but the Committee consider that it would be difficult for some medical schools to comply with such a requirement. Further, they are of opinion that students attend many autopsies in addition to those officially required. Consequently the Committee do not recommend alteration of the present requirement.

5. PHARMACOLOGY

The Committee recommend that the present resolution should be altered to read: "A course in pharmacology and materia medica, including practical pharmacy."

RESIDENT HOSPITAL APPOINTMENTS

The methods suggested for providing the necessary time fall into two main categories:—

(*a*) That the period should be subsequent to the completion of the five years' curriculum. The Council have no power to make any requirements subsequent to the passing of the final, or qualifying, examinations. Further, the Committee are of opinion that there are no substantial grounds for lengthening the present period before a student can become a fully qualified registrable medical practitioner.

(*b*) That a period of six to nine months in the final clinical year should be allotted to such appointments. The Committee are of opinion that no such time is available within the five years' curriculum. The appropriation of several months for such a purpose would seriously diminish the period now regarded as a minimum for fulfilling the present requirements of the Council.

If the proposed resolutions are accepted, every student will spend four months in residence in hospital and the Committee believe that this will provide the student with valuable experience of the character desired.

ADDITIONAL RESOLUTIONS

The Committee have considered the criticisms that the present resolutions contain no reference to instruction in the measures by which normal health may be maintained. They recommend that the substance of the present additional resolution (*a*) be incorporated in the body of the Resolutions, under the general heading "Medical Curriculum," by the insertion of the following paragraph:—

"Throughout the whole period of study the attention of the student should be directed by his teachers (*a*) to the importance of the measures by which Normal Health may be maintained, and (*b*) to the principles and practice of the Prevention of Disease."

INSTRUCTION IN LEGAL AND ETHICAL SUBJECTS

The Committee recommend with regard to this that instruction should be given during the later stages of the period of Clinical Studies by some person having practical knowledge of ethics, and of the statutory obligations of registered medical practitioners under the National Health Insurance Act and other Acts of Parliament.

In this instruction attention should be called to all Notices of these subjects issued by the General Medical Council.

The Resolutions

The following are the resolutions, which commence with the statement that every medical student should, at the beginning of his studies, be registered in the Medical Students' Register as prescribed by the Council.

I.—Pre-registration Examinations

Before registration as a student or commencement of the medical curriculum proper every person shall be required to pass, in addition to an approved preliminary examination in general education, an examination or examinations conducted or recognised by one of the licensing bodies, and comprising the following subjects :—

1. *Physics* (theoretical and practical), the elementary mechanics of solids and fluids, the elements of heat, light, sound, electricity, and magnetism.
2. *Chemistry* (theoretical and practical), the elementary principles of the chemical combination of elements including carbon.
3. One or two subjects of *general education* at an approved standard.

II.—Medical Curriculum

With regard to the course of study and examinations which persons desirous of qualifying for the medical profession shall go through in order that they may become possessed of the knowledge and skill requisite for the efficient practice of medicine, surgery, and midwifery, the Council recommend as follows, viz. :—

The period of professional study, between the date of registration as a medical student and the date of the final examination for any diploma which entitles its holder to be registered under the Medical Acts, should be a period of certified study during not less than five academic years.

The first two years should be devoted to the study of Professional Scientific Subjects with an introduction to Clinical Subjects. The last three years should be devoted to the study of the Clinical Subjects, together with the clinical application of the Professional Scientific Subjects.

Throughout the whole period of study, the attention of the student should be directed by his teachers (*a*) to the importance of the measures by which normal health may be maintained; and (*b*) to the principles and practice of the prevention of disease.

In every course of professional study, and in the examinations, the following subjects should be included :—

(A) PERIOD OF STUDY OF THE PROFESSIONAL SCIENTIFIC SUBJECTS

1. *Elements of General Biology.*—A course of instruction, including practical work, in the fundamental facts of vegetable and animal structure, life-history and function; and an introduction to the study of embryology. This course may commence in the pre-registration period.

2. *Human Anatomy and Human Physiology.*—These courses should include :—

(1) Dissection of the entire cadaver;
(2) Anatomy of the living body;
(3) Elements of human embryology;
(4) Histology, cytology, and the principles of genetics;
(5) The principles of general physiology, the chemistry and physics of bodily functions studied as far as possible in the human subject;
(6) Elements of normal psychology.

Instruction, illustrative of that given in anatomy and physiology and introductory to later studies, should be given in the second year in the following subjects, the amount of time to be allotted to them not to exceed one-third of the total time available in that year :—

3. *Elements of the Methods of Clinical Examination*, including physical signs, the use of the stethoscope, ophthalmoscope, &c., and the examination of body fluids (with demonstrations on living subjects, normal and abnormal).

4 *An Introduction to General Pathology and Bacteriology.*

5. *An Introduction to Pharmacology.*

Note.—It is recommended that students should not pass to the Period of Clinical Studies until they have satisfied the examiners in the subjects of the first and second years.

(B) PERIOD OF CLINICAL STUDIES

This period occupies the third, fourth, and fifth years of the medical curriculum proper. These should be calendar years, during which clinical instruction should be continuous. A minimum period of three years should in every case be given to clinical study in an approved hospital after the completion by the student of the professional examinations held at the close of the second year of the medical curriculum proper.

6. *Medicine*, including :—

(1) Systematic instruction in the principles and practice of medicine;
(2) A medical clinical clerkship in the hospital wards for a period of six months;
(3) A continuous period of not less than one month in residence in hospital or conveniently nearby, attached to medical wards;
(4) A clinical clerkship for a period of not less than one month in a children's ward or hospital;
(5) Regular attendance in a medical out-patient or equivalent department for a period of three months;
(6) Regular instruction and demonstrations in applied anatomy and physiology during the period of clinical studies, to be carried out by the teachers of anatomy and physiology and the clinical teachers jointly;
(7) Instruction in methods of treatment, including (*a*) dietetics, (*b*) therapeutics and prescribing, (*c*) physiotherapy, (*d*) principles of nursing;
(8) Instruction in the following branches of medicine: (*a*) disease in infancy and childhood, and child welfare, (*b*) acute infectious diseases, (*c*) tuberculosis, (*d*) psychology and mental diseases, (*e*) diseases of the skin, (*f*) radiology in its application to medicine, (*g*) theory and practice of vaccination.

Note.—The instruction in these branches of medicine should be directed to the attainment of such knowledge as to ensure familiarity with common conditions, their recognition and treatment, and the indications for consultation.

7. *Surgery*, including :—

(1) Systematic instruction in the principles and practice of surgery;
(2) A surgical dressership in the hospital wards for a period of six months;

Note.—During his period of surgical dressership a student should spend the greater part of his time at the bedside and in the out-patient department; and he should not be required to attend in the operating theatre unnecessarily.

(3) A continuous period of not less than one month in residence in hospital or conveniently nearby, attached to surgical wards;
(4) Regular attendance in a surgical out-patient or equivalent department for a period of three months;
(5) Practical instruction in surgical methods, including physiotherapy;
(6) Practical instruction in minor operative surgery on the living;

(7) Instruction in the administration of anæsthetics, the candidate being certified to have administered anæsthetics on at least ten occasions;

(8) A course of instruction in operative surgery;

(9) Regular instruction and demonstrations in applied anatomy and physiology during the period of clinical studies, to be carried out by the teachers of anatomy and physiology and the clinical teachers jointly;

(10) Instruction in the following branches of surgery: (*a*) disease in infancy and childhood, (*b*) diseases of the eye and principles of refraction, (*c*) diseases of the ear, nose, and throat, (*d*) radiology in its application to surgery, (*e*) venereal diseases, (*f*) orthopædics, (*g*) dental diseases.

Note.—The instruction in these branches of surgery should be directed to the attainment of such knowledge as to ensure familiarity with common conditions, their recognition and treatment, and the indications for consultation.

8. *Midwifery, Infant Hygiene, and Diseases of Women*, including:—

(1) Systematic instruction in the principles and practice of midwifery and gynæcology, including the applied anatomy and physiology of pregnancy and labour.

(2) Lectures and demonstrations in clinical midwifery, infant hygiene and gynæcology, and attendance on the practice of a maternity hospital or of the maternity ward of a general hospital, and on in-patient and out-patient gynæcological practice, for a period of six months, this period to be subsequent to the medical clinical clerkship (paragraph 6 (2)) and the surgical dressership (paragraph 7 (2)). During this period the hours of clinical instruction should be so allotted that at least two-thirds are given to midwifery, including antenatal care and the hygiene of infants.

(3) Of this period of clinical instruction not less than two months should be spent as a resident pupil either in a maternity hospital, or in a hostel attached to a maternity hospital or the maternity wards of a general hospital, and these two months should be devoted exclusively to instruction in midwifery and in the hygiene of infants. The student should during these two months attend at least 20 cases of labour under adequate supervision.

(4) Throughout the six months the student should receive practical instruction in the wards and out-patient department of the maternity hospital in the principles of (*a*) antenatal and postnatal care, (*b*) the management of the puerperium, (*c*) the care of the new-born infant.

A certificate of having attended 20 cases of labour should be signed by a responsible medical officer on the staff of the hospital, and should state: (i) that the student has personally attended each case during the course of labour, making the necessary abdominal and other examinations under the supervision of the certifying officer, who should describe his official position; (ii) that the first five at least of the 20 cases were delivered by the student in the lying-in hospital or ward: (iii) that satisfactory written histories of the cases attended, including when possible antenatal and postnatal observations, were presented by the student and initialed by the supervising officer.

9. *Pathology and Bacteriology.*—Courses of instruction throughout the Period of Clinical Studies in (1) general and special pathology and morbid anatomy; (2) clinical and chemical pathology; (3) general and clinical bacteriology and immunology.

Each student should be required to have received practical instruction in the conduct of autopsies, and to have acted as a post-mortem clerk in at least ten cases.

10. A course in *Pharmacology and Materia Medica*, including practical pharmacy.

11. *Hygiene and Public Health.*—Instruction in these subjects should be given during the later stages of the Period of Clinical Studies.

12. *Forensic Medicine.*—Instruction in this subject and its application to practice should be given during the later stages of the Period of Clinical Studies.

13. *Legal and Ethical Obligations of Registered Medical Practitioners.*—Instruction should be given during the later stages of the Period of Clinical Studies, by some person having practical knowledge of the subject, on the statutory obligations of registered medical practitioners under the National Health Insurance Acts and other Acts of Parliament, and on the principles of medical ethics. Attention should be called to all Notices on these subjects issued by the General Medical Council.

MEDICINE AND THE LAW

Professional Secrecy where Criminal Abortion is Suspected

WHERE a woman dies as the result of an illegal operation, there is sometimes a suggestion by the police that the medical practitioners who attended her before death have improperly failed to reveal, or to extract, information which would have led to the abortionist's prosecution. Naturally there is no certainty that a dying woman will always have told the doctor the name of the person who performed the illegal operation; but the point is made that, if no such statement is taken from her, no person is identified against whom proceedings can be taken. Such a case occurred at an inquest last week. It is one of those which show the difference between police or magistrates and doctors in their approach to the problem. The doctor is primarily concerned to save life and alleviate pain, and for this purpose will not destroy the patient's confidence and peace of mind by persistent cross-examination; the forces of law and order do not want a criminal to go unpunished. The situation is by no means novel. The dilemma was brought to notice in a well-known instance in 1914 by Mr. Justice Avory in addressing the grand jury at Birmingham assizes (THE LANCET, 1915, i., 28). On that occasion three doctors had attended the dying woman; to one of them she had mentioned the abortionist's name; among her papers was a letter apparently making an appointment with the abortionist. That was all the evidence against the accused, if evidence it could be called, and the case could not proceed. The Royal College of Physicians of London, which had stated a case earlier for the opinion of Sir Edward Clarke and Mr. Avory (as he then was), took up the matter again and published (ibid., 1916, i., 313, and 1932, ii., 847–915) its own view of the medical practitioner's duty. It upheld the essential confidentiality of the relationship between doctor and patient, but added that every doctor who is convinced that criminal abortion has been practised on his patient should urge her, especially when she is likely to die, to make a statement which may be used against the person who performed the operation "provided always that her chances of recovery are not thereby prejudiced." The Royal College went on to say that, in the event of her refusal to make such a statement, the doctor is under no legal obligation to take further action but should continue to attend the patient to the best of his ability; if the patient dies, the doctor will refuse to give a certificate of death and will communicate with the coroner. The College was advised by counsel that legally the doctor is under no obligation either to urge the patient to make a statement or, if she refuses, to take any further action. While this view of the legal position may not obtain the concurrence of chief constables or of magistrates and judges, it is a reasonably safe guide for the medical practitioner as to his professional duty. If the patient is dangerously ill, a magistrate may take a voluntary statement from her on oath or affirmation which will be available in criminal proceedings after her death, provided that the accused person had reasonable notice and opportunity of being present and cross-examining. A "dying declaration," made by the patient in the belief that her end is approaching, may be made verbally to the medical practitioner or anybody else and will be admissible in evidence. The recipient should write down the exact words used as accurately and as early as possible.

Accessories to Crime

A more active kind of intervention between police and criminals has lately been discussed in America. Dillinger and other public enemies, it appears, may have sought the professional aid of doctor or surgeon in order to disguise the tell-tale impressions left by their finger-prints. The practitioner who undertakes such work can hardly be ignorant of its criminal purpose. He is likely to be prosecuted as an accessory after the fact if, knowing a felony to have been committed, he receives, relieves, comforts, or assists the felon. To "receive" a felon covers "any assistance whatever given to one known to be a felon in order to hinder his being apprehended or tried." This is so stated in Hankins's Pleas of the Crown in a passage quoted with approval in R. *v.* Levy in 1912. The accused in that case had helped a coiner by removing fragments of coining moulds from the coiner's room with the idea of preventing them from being evidence against the coiner. To help a criminal to prevent his known finger-prints from being impressed is clearly to attempt to hinder his being apprehended. If a doctor helps a known "public enemy" in this way, then, apart from the prospect of his criminal liability as an accessory before or after the fact, he might possibly be indicted under the vague and comprehensive accusation, lately discussed in R. *v.* Manley, of doing an act which is a public mischief.

Prisoners Absconding from Hospitals

George Rivers, aged 36, serving a sentence in Wandsworth Prison, was sent to the St. James's Hospital, Wandsworth, for an operation. Though he was described as a dying man who, with the best possible treatment, might live another month, he managed to escape from the hospital on May 26th after scaling a 7 ft. wall. Wearing his blue hospital suit at his departure, he remained at large until he gave himself up last week at the prison. Such incidents are a reminder that civil hospitals are not equipped for the restraint of patients sent from prison. The latest statistics available show that 109 male and 18 female prisoners were removed from prisons to civil hospitals for operation or special treatment during 1933. The statutory authority is Section 17 (b) of the Criminal Justice Administration Act of 1914, which declares that, while absent from prison in this way under Home Office order, the prisoner is still deemed to be in legal custody. The Prisons Commissioners' report for 1933 contained a statement by the Medical Commissioner that on the whole the prisoners conducted themselves well, "but a few abscond and some hospital authorities are apprehensive when a patient is admitted to a general ward from prison." The apprehension is not entirely surprising and the report explains that steps are being taken to have an operation theatre available in a prison in the London area. Experience has been gained by the satisfactory carrying out of major operations in five provincial prisons.

AUSTRALIA

(FROM OUR OWN CORRESPONDENT)

THE TREATMENT OF INFANTILE PARALYSIS

MUCH controversy in which the main issues have been clouded by spirited attack and counter attack in the public press has arisen during the last few months about the merits of a certain method of treating established infantile paralysis. The story began in February last when it was announced in the public press of Australia that a new system of treating infantile paralysis had been presented to the Commonwealth Government, which in the opinion of prominent medical men had achieved success not previously obtained by other methods. In the *Sydney Morning Herald* of Feb. 16th it was stated that the system had been devised by Sister Elizabeth Kenny and had been approved by the Queensland Department of Health. Dr. J. F. Guinane, who had carried out an investigation for the Queensland Government, was said to have reported that Sister Kenny's methods had made total and permanent cures in early cases of infantile paralysis and that in spastic cases it was superior to any other method. The origin of the treatment, according to this report, was the work done by Sister Kenny during the war when nursing cases of meningitis on troop-ships; during that period she is said to have evolved certain ideas on the treatment of paralysis, and after the war she began to apply these ideas in the treatment of victims of infantile paralysis and cases of spastic paralysis. Sir Raphael Cilento, Director of Medical Services in Queensland, had, it was said, been deputed to investigate the matter, and had reported so favourably that the Government of Queensland had opened a clinic in Townsville in March, 1934, to train students in the methods.

A silent film was shown to medical men and others, to which Sister Kenny supplied a running commentary, in which were shown the results in a number of patients treated by her methods. Three weeks later there appeared in the *Sydney Morning Herald* of March 9th the report of an interview with Sir Raphael Cilento, in which he was alleged to have said: "The Queensland Government or myself do not approve or disapprove of Sister Kenny's method." He had investigated her method and acting on his report the Government had opened a clinic at Townsville in March, 1934. The clinic with a staff of six nurses was established for a two-year period from funds provided by the Home Department. His report was to the effect that her treatment had improved the health of patients particularly in regard to their general activity. In no case had she restored the functions that had been lost by nerve destruction.

The next step in the matter came on March 14th from Canberra where Sister Kenny had gone to place her proposals before the Commonwealth Government; she expressed her astonishment at Sir Raphael Cilento's statements and produced a letter dated Jan. 31st in which, she said, Sir Raphael mentioned his agreement to write a book descriptive of her methods. In his reply to this, in the *Brisbane Courier-Mail* of March 15th, Sir Raphael said that he saw no cause to alter the opinion expressed in his official report. He had agreed to assist Sister Kenny in the compilation of a book, if and when the method should show itself effective to a degree that justified a book. Of the 16 original cases, for the study of which the Townsville clinic has been instituted, in his opinion 7 were stationary, while 5 had abandoned treatment. These were the only cases of this series which had been under observation long enough to justify even a tentative opinion.

As a result of the publicity there arose a demand from parents having children suffering from infantile and other forms of paralysis to be able to obtain the treatment. Townsville is situated in the north of Queensland and many miles from the larger centres of population. As this is the only clinic available for the treatment, crippled children have been sent by train and aeroplane to Townsville and public subscriptions have been organised in country towns to send children there. A demand also arose for the creation of clinics at Brisbane and other capital cities.

On April 2nd the Commonwealth Government announced the result of its investigations and the Federal Minister for Health and Repatriation (Mr. William Hughes) read a report which had been made to him by the medical superintendent of the Frankston Orthopædic Hospital, Victoria (Dr. Galbraith), and a Melbourne orthopædic surgeon, Mr. Whittaker, on an inquiry they had made into the treatment. Their report was as follows:—

> "It is our opinion that the only way of demonstrating the value of Sister Kenny's work, and of comparing it with orthodox methods, would be to give her facilities to treat cases, both recent and chronic, in one, or preferably two, capital cities. Such work should be carried out by Sister Kenny in person, or by her trainees. It would be wise, and with this Sister Kenny agrees, that the location of such facilities be at a public hospital, and preferably a children's hospital. Sister Kenny has always worked with the medical profession, and it is hoped that a cleavage will not be enforced by establishing clinics apart from such hospitals. Under the Hospitals Commission certain safeguards would be necessary, but we are definitely of the opinion that if the Government requests the committees of management of the hospitals to provide such facilities, some mutually satisfactory arrangement could be reached."

As the result of this report, it was decided that the Commonwealth Government should take steps to have the method tested in public hospitals in Melbourne and Sydney with the coöperation of the Victorian and New South Wales Governments. On April 11th the New South Wales Minister for Health announced that his Government had been approached by the Commonwealth Government and was anxious to provide Sister Kenny with all facilities to make an early start with her treatment. Later it was announced that it was proposed to open a clinic at the Royal North Shore Hospital, Sydney.

On May 13th it became apparent that an open break had occurred between Sister Kenny and the Queensland Government over the establishment of the Brisbane clinic. She announced that she did not intend to comply with the request by the Home Secretary to conduct a clinic in Brisbane while any doubt of the efficiency of her method existed, and that she had been unable to arrange for a clinic to be established under conditions satisfactory to her or the patients. Sir Raphael Cilento, she contended, had attempted in his report to the Home Secretary to discredit her methods, had raised doubts about its originality, and had inferred a similarity between her methods and those published by Dr. Wilhelmina Wright in the United States in 1927. (Actually Sir Raphael's conclusion had been that her work was soundly based, was effective within certain limits, and was similar in general principles to those advocated by most modern doctors and specialists.) Everyone, she added, would appreciate her unwillingness to have her work extended in Queensland in view of the unsympathetic attitude of the Government medical adviser.

The Queensland Government announced that it intended to proceed with the clinic, and on May 25th Sister Kenny in the *Brisbane Courier-Mail* stated that she had not given her permission for the use of her methods at this clinic, one reason being that the description of her method had not been officially presented to the Home Secretary. The only copy of the description of her method was in her possession. Sir Raphael Cilento had possession of an incomplete and discarded draft copy, in which one essential feature was not mentioned. She had asked the Home Secretary, in the interests of the public, to have that copy destroyed. She resented, she said, Sir Raphael's half-hearted approval of her work and his implication that her method was not original. She proposed that a committee be appointed to determine the originality of her work. Years before she had visited America she had effected cures in Australia.

A reply to this was made by Sir Raphael Cilento in which he said that the Government intended to open the Brisbane clinic and place in charge of it the nurse who was first appointed and longest trained at the Townsville clinic. He regretted that he had been made "the villain of the piece" and suggested that the real reason for her not opening the Brisbane clinic was that she had received a better offer to establish a larger clinic in Sydney. He repeated his opinion "that her work was soundly based and was effective within certain limits. To suggest that there should be no qualifications as to the effectiveness of her method was to suggest that it should be described as miraculous."

The Government also announced that it intended to make a register of all sufferers from infantile paralysis in Queensland. An effort would be made to trace every possible case and in view of the success that had attended the work so far, the Government was of the opinion that every paralysis sufferer should be given a course of after-treatment at clinics which would be established at various centres throughout the State. It was also announced that the Government had taken over the control of the Townsville clinic as a Government activity. Resentment at this action by the Government has been expressed at a meeting of the parents of patients at the clinic and a public meeting of protest is being arranged.

Sister Kenny on May 17th made a further announcement. Her attitude throughout had been that she would not extend the work at Townsville to any other centre unless she had the complete confidence of the people and Governments concerned. So that there would be no repetition of the trouble which had occurred in Brisbane, she must have an assurance, before she would accept the invitation to establish a clinic in Sydney, that the authorities in New South Wales were convinced of the originality of her method, its scientific basis, and its value to the medical profession. For this purpose a Sydney doctor would visit her in Brisbane within a week, and when the Queensland Government was prepared to comply with her conditions for the protection of all concerned, she was ready to serve the people of that State.

The medical profession in Australia and the public generally are very much in the dark concerning the whole matter, and no public disclosure of the method has been made. The first announcement was somewhat modified by the medical authorities in Queensland, who state that the results obtained have been satisfactory, but discount anything miraculous. On the other hand, a letter has appeared in the

Courier-Mail, May 14th, signed by five of Sister Kenny's patients, in which they state that all but one of them had had many years' experience with orthodox methods of treatment, and that results were obtained by Sister Kenny's methods which appeared impossible of accomplishment by the ordinary treatment; the improvements had been of a permanent nature and no relapse had occurred in five months.

What the exact nature of the treatment consists in is difficult to ascertain. Undoubtedly re-education plays a large part in it. By some the treatment is regarded as being of the nature of psychic cure by a woman of outstanding personality. It is considered that her personal service and supervision in carrying out the treatment plays a large part in its success. The method is reputed to differ from those ordinarily adopted in the following respects:—

1. No splinting or plaster is used at any stage of treatment.
2. Movements are carried out where possible under water, to which some salt is added.
3. Treatments are given frequently during the day, with rest periods between.
4. Hydrotherapy in the form of sprays and showers is used.
5. Attempts at active and passive movements are made at the earliest possible moment.

As Sister Kenny has nowhere set out the details of her method, there is no way of checking these impressions which are based on reports and on remarks made by her whilst demonstrating her film.

In view of the public interest in this matter, it is to be hoped that a public disclosure of the method will soon be made. Amongst medical men who have examined patients treated by the method, there appears to be considerable divergence of opinion as to its value.

AN UNUSUAL MEDICO-LEGAL PROBLEM

About the middle of April some fishermen caught a large tiger shark on the Coogee Beach for the purposes of exhibition at the Coogee Aquarium. The shark refused to eat and for a week swam lazily up and down the pool, brushing its body against the sides. On April 25th it began to flay the water to foam, dashed up to one end of the aquarium, and threshing wildly with its tail, disgorged several objects. These included some vertebræ of a large fish and a human arm. A piece of rope was tied tightly around the wrist and the arm was in a good state of preservation. There was a large gash in the front of the arm just above the elbow and some small irregular and superficial incisions, which may have been caused by the teeth of the shark, on the back of the forearm. The arm was cleanly cut through just beyond the acromion and cleanly dissected off at the shoulder-joint. On close examination it was thought by the authorities to be unlikely that a bite of a shark could have so nearly removed the arm through the joint, and that removal was probably by human agency. It was clear from the flaps that the method adopted was not surgical, and the arm showed no evidence of being a discarded dissecting-room specimen. On the front of the forearm was a tattoo mark of two men boxing. The police continued their investigations; they obtained the fingerprints with some difficulty and later the arm was identified by its tattoo marks and fingerprints as belonging to a man who had disappeared from his home on April 8th and had since then not been heard of. As nobody was forthcoming, the city coroner could hold no inquest and there was not sufficient of the body to permit him to hold a magisterial inquiry. It is thought that the police will attempt to overcome their difficulty by bringing medical evidence to certify that the owner of the arm could not have lived without medical attention. A man has been arrested and charged with murder. The incident is not altogether without precedent, as according to a story in H. S. Mazet's book "Shark! Shark!" the crew of the brig *Nancy* were sentenced for piracy in 1771 on the evidence of a log book found in the stomach of a shark.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

NEUROPATHOLOGY

THE Scottish mental hospitals have a joint scheme for pathological research, and an account of its thirty-seventh year's work has just appeared. Two years ago the board secured the services of Dr. J. H. Biggart as pathologist, and he has been able to form a highly efficient laboratory for the study of neuropathology. Specimens are sent to him from many of the mental hospitals in Scotland, and from general hospitals in Edinburgh, particularly the Royal Infirmary where the laboratory is situated. His services are already much appreciated by all who are interested in neuropathology, and it is to be hoped that his laboratory will be increasingly used both for routine examination and for research work. A specialised laboratory such as this is essential for the proper study of the pathology of the nervous system, owing to the complicated nature of the modern staining technique.

A CHILDREN'S HOSPITAL

The annual report of the Royal Edinburgh Hospital for Sick Children shows that its work is steadily increasing. A total of 3144 cases were treated in the wards during the year, and the number of attendances at the out-patient department, including the massage and sunlight departments, was nearly 40,000. The ordinary income amounted to £14,264; the income from legacies and the like was £10,280; and the expenditure for the year was £19,019. During the year 190 patients were treated in the convalescent home at Gullane. Through the generosity of Lord Forteviot and members of the Dewar family a new convalescent home for children under two years of age is to be opened. The medical staff intend to start a campaign against rheumatism in childhood, which they compare to cancer in the adult. No disease is more tragic and they are to be congratulated on this intention.

PIONEERS IN MENTAL DISEASE

Bronze plaques in memory of six pioneers in the humane treatment of mental disease were unveiled last week by Sir Arthur Rose, chairman of the General Board of Control for Scotland, in the grounds of West House, Royal Edinburgh Hospital for Mental and Nervous Disorders. They are arranged around the bust of Philippe Pinel, and commemorate the work of William Tuke, Andrew Duncan, Florence Nightingale, Dorothea Dix, Gardiner Hill, and Campbell Clark. Tuke was the founder of the Retreat in York, and Duncan of the Royal Edinburgh Asylum. Dorothea Dix, an American, after visiting the asylum, was so impressed by the work done there, that she made a report which resulted in the Lunacy Act of 1857 coming into being. Gardiner Hill had much to do with the abolition of restraint and locking-up in mental cases; Florence Nightingale had advanced ideas in practice and theory on the treatment of mental cases; and Campbell Clark advocated the registration of nurses both male and female. The leading part played by the Royal Edinburgh Hospital in the treatment of mental diseases was emphasised by speakers at the ceremony, and it was pointed out that the hospital was the first to use women nurses for the care of the mentally afflicted. This has proved to be one of the biggest advances made in the treatment of mental disease.

PARIS

(FROM OUR OWN CORRESPONDENT)

PROFESSIONAL DISCIPLINE

I HAVE already referred to the proposal to create a doctor's Order which, modelled to some extent on the one that governs the legal profession, should fulfil certain functions of the English General Medical Council. Matters have now advanced so far that the Bill in question has passed the chamber of deputies without discussion and has come back again after a certain amount of mutilation by the Senate. It remains to be seen whether the chamber will approve of the modifications now made. One of them concerns the composition of the final court of appeal; the Confederation of Medical Syndicates would have liked this court to consist of two lawyers and four doctors, but the senate prefers three doctors and three lawyers. As the president would be one of the legal experts and would have a casting vote, the balance of power would be with the layman. This point may be trivial or crucial. On the whole it is thought to be trivial for experience elsewhere has shown that the legal mind will often defer to the opinion of the medical profession in its own realm. In other words, legal acumen is not always divorced from common sense.

Meanwhile, it is interesting to note that the need for a doctors' Order was almost met as long ago as 1845, when a scheme was on foot for the creation of "medical colleges" with functions mainly disciplinary. Like much other useful legislation this scheme came to nothing in the revolution of 1848; and its suspension was regarded on the whole with equanimity by the doctors of that day, who saw in it rather too much of the schoolmaster. This was a time when the ethical standard of the medical profession was jealously kept at a high level. The black sheep was comparatively conspicuous, partly because the fold was small, partly because he was obviously in the minority. Now, it is regretfully admitted, the fold is far larger than the remunerative pasturage, and the many genuinely black sheep are the less conspicuous because there are so many piebald cross-breeds in the flock. Much of the blame for the lowering of standards is laid at the door of sickness insurance, which has created new conditions of medical practice. These conditions certainly afford wonderful opportunities for smartness and a nimbleness of wit which is sometimes construed unfavourably by colleagues who are not so agile mentally. It remains to be seen how the new Order will deal with these problems. Its enemies gleefully point to the not infrequent lapses of which lawyers are convicted despite the disciplinary terrors of their Order.

USE OF BARBITURATES FOR SUICIDE

The vogue of barbiturate suicides has now become so embarrassing that the minister of public health has asked the Academy of Medicine to give an opinion on the desirability of including certain barbiturates and other drugs among those which cannot be bought without the signature of a doctor. The Société de Pharmacie de Paris recently adopted a unanimous resolution recommending, among other things, the examination of this problem by a commission which might well be the Commission Permanente du Codex. Hitherto legislation and practice have wobbled uncomfortably from one extreme to the other. There have been times when you could not buy syrup of tolu without a doctor's prescription, whereas at present you can buy without prescription all you need and more to secure your early demise. As for the barbiturates, whose usefulness in insomnia is unquestionable, the suggestion has been made that they be combined with ipecacuanha in proportions assuring the speedy return of the drug taken in suicidal doses; indeed, a formula for the purpose is said to have been devised already. It is to be hoped that this expulsive compromise will be adopted, for the public is so accustomed to the purchase of certain popular hypnotics that it would assuredly resent the imposition of medical restrictions at this time of day. After all, poisoning by the barbiturates is fairly easily dealt with in hospital provided the case is not exceptionally severe. From the Saint-Louis Hospital Dr. C. Flandin reports encouraging experiences, in more than 200 cases, with injections of strychnine. He prefers it to Coramine or anything else as an antidote; but the dosage must not be *timid*. He has never known strychnine kill the patient offhand, even when 50 mg. (gr. ¾) was given intravenously. The dosage he recommends, under the control of Chovstek's sign, is between 20 and 50 mg. repeated every half-hour or hour till the desired effect has been obtained. He reinforces this treatment by venesection, blood transfusion, and, above all, by artificial respiration supplemented by the inhalation of a mixture of oxygen and CO_2. Adrenalised serum, given per rectum, is also useful. If too much strychnine has been given, there are antidotes to it; Gardenal is too toxic for this purpose, but Isonal gives a much wider margin of safety. Dr. Flandin dispenses with alcohol, for he is inclined to regard it as an adjuvant rather than as an antidote to barbiturate poisoning.

THE INTERNATIONAL UNION AGAINST CANCER

After a difficult labour lasting more than ten years, the International Union against Cancer was born on May 4th of this year. Forty-four nations were represented on this occasion. Justin Godart is the first president of the Union, whose headquarters will be in Paris. In his presidental address he outlined the steps which led to the birth of the Union and referred briefly to its future functions.

KING GEORGE HOSPITAL, ILFORD.—For the coming year a maintenance income of approximately £40,000 will be required. There has been during the past year a capital outlay of over £21,000, and the building fund has been reduced from £24,720 to £18,950. During the year 142 beds have been available and 154 occupied, daily extra beds being constantly in use.

NOTTINGHAM GENERAL HOSPITAL.—Six single-bedded wards, ten 2-bedded wards, and two 4-bedded are to be provided in the pay-bed wing of this hospital. The maximum charge will be not more than 4 guineas a week maintenance rate. In addition there will be six single-bedded wards available for generous friends of the hospital, the charge for these being 10–12 guineas a week maintenance rate.

CORRESPONDENCE

THE INTERNATIONAL CAMPAIGN AGAINST RHEUMATISM

To the Editor of THE LANCET

SIR,—An active campaign against chronic rheumatic disease is now being prosecuted in many countries and with encouraging results. We desire to call the serious attention of your readers to the efforts of the modest organisation to which this widespread activity is largely due.

The first International Committee on Rheumatism was appointed in Paris just ten years ago.[1] A few months later (November, 1925) an International Conference on Rheumatism was held at the house of the Royal Society of Medicine, and addressed by Sir George Newman, on behalf of the Ministry of Health, and Dr. Kahlmeter, of the Board of Pensions in Sweden. Reports were presented from England, France, Holland, Denmark, Switzerland, and Rumania.

Following this conference the International League against Rheumatism was constituted as an independent body, with a central council consisting of national representatives, and began its task of associating in one organisation the isolated workers in rheumatic disease. Meetings were called and committees were quickly set up in many countries. A periodical journal, the *Acta Rheumatologica* in three languages, was produced and widely circulated, and a small central bureau and library were opened.

International congresses, arranged with the help of the national committees and attended by government representatives from the countries seriously affected by rheumatic disease, have awakened great interest in the medical profession, and in industrial and social bodies. The problems of research and treatment, together with the social, economic, and industrial results of rheumatism, have been examined at these meetings—in Prague, Budapest, Liége, Paris, and (1934) Moscow. The next Congress is due in Sweden in 1936.

Fortunately the costs of the journal have in most years been nearly met by personal subscriptions, but apart from the journal the wide activities of the League, in which there is no salaried officer, entail a certain (very moderate) expenditure. This has been until lately met by contributions from a number of national groups. Unfortunately now, owing to widespread economic difficulties, most of the countries connected with the League are unable to continue their grants. The actual income in 1934 has fallen on this account to one-third of what it was in 1931. The annual deficits (£119 for 1934 and £316 for previous years) now amount to £435, and have been met by officers and friends of the League.

The famous Report of the British Ministry of Health in 1924 on the Incidence of Chronic Rheumatic Diseases called attention to the extent and gravity of the rheumatic problem in northern countries, and this report is still regarded as a milestone wherever rheumatic diseases are being seriously studied. Britain gave this lead, and has done excellent work in following it up. It is, however, rather humiliating that while smaller nations, known to be distressed, have subscribed or, if unable to subscribe, made up deficiences from private sources, this country, which has benefited not a little by the work of the League, has not come forward with any financial support. Probably this is an accidental oversight, and we should be proud to shoulder our share of the burden.

At the last meeting of the Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians it was resolved: "That this committee recognise the value of the work being done by the International League against Rheumatism, and consider it worthy of the support of all interested." A sum of £1000 is needed to tide over the emergency until more normal conditions are restored. We hope that this sum will be forthcoming from public bodies and private individuals who may be glad to supply this need. Contributions may be sent to A. C. Timbrell Fisher, Esq., M.C., F.R.C.S., 59, Montagu-square, W.1.—We are, Sir, yours faithfully,

R. FORTESCUE FOX,
President of the League.
FRANCIS R. FRASER,
HORDER,
HUMPHRY ROLLESTON,
W. H. WILLCOX.

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[1] At the annual meeting of the International Society of Medical Hydrology (April, 1925).

ZOOLOGY AND MEDICINE

To the Editor of THE LANCET

SIR,—The profound connexion between medicine and zoology in the past and at the present time offers ample justification for a discussion on their present relations. Every medical graduate is a zoologist of a kind, a homozoologist; and every specialist on any kind of animal, vertebrate or invertebrate, is a zoologist of the same order as the human specialist. Their problems are comparable and their affinities manifest. Thus, although every zoologist does not specialise in one animal nor does every medical graduate specialise in the ensemble of man, their fundamental needs in training are, it will be generally admitted, similar to a great extent.

The precise extent of the needs of the medical student, as defined recently by the conference of representatives from Oxford, Cambridge, London, the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Society of Apothecaries of London, will doubtless be considered by the General Medical Council which, it is understood, has the same problem under consideration. If, however, the thesis that the basic training needs of zoologist and medical student are largely identical is admitted, it would seem advisable that the problem be discussed with representatives of such a body as the British zoologists. The writer holds the view that, although a good elementary knowledge of botany is important to the medical student, the zoological training is of far greater importance and needs special consideration.

In reviewing the medical curriculum as a whole it is necessary to decide whether knowledge of the following subjects, for example, is desirable and in which part of the curriculum, if any, they should be treated:—

An acquaintance with the chief groups of animals and more detailed knowledge of amœba, paramecium, hydra, obelia, lumbricus, periplaneta; along with elementary comparative anatomy of fish, amphibian and mammal.

Elementary histology of vertebrate tissues.

Elementary knowledge of the function of all parts of the body, leading to an appreciation of the functions of the body as a whole.

Elementary knowledge of common parasites—e.g., monocystis, plasmodium, entamœba, ancylostoma, distomum, bilharzia, tænia, ascaris.

Elementary knowledge of common pests—e.g., house-fly, mosquito, flea, bug, lice, sarcoptes, and poisonous animals.

Simple Mendelian characters in plants and animals including man) and simple facts of variation.

The principle of shell-fish cleansing.

Sex-phenomena and modes of sex-determination. simple facts of dedifferentiation and regeneration. tissue-culture.

Commensalism. symbiosis and parasitism.

Development and differentiation in a minimal series. as echinus. amphioxus. chick, mammal.

Argument for evolution based on simple *facts* of geological succession of vertebrates, of embryology. physiology, classification, distribution and modification of organs.

Animal behaviour. animals and their environment. and theories of evolution treated in a very elementary manner.

Elementary practical experience : in dissecting. in use of microscope, in identification of bones. of fresh and preserved tissues, of living animals and stages of life-histories.

It follows that if a knowledge of all or most of these subjects is desirable in the first year of training. the subject matter of zoology alone becomes comparable in extent with that of elementary physics and elementary chemistry.

I am. Sir. yours faithfully.

J. H. ORTON.

The University, Liverpool. June 11th.

*** The report of the Curriculum Committee of the G.M.C.. adopted by the Council as an interim document for the consideration of the training centres. was not published when Prof. Orton wrote : but his letter is very apposite when read in connexion with the Committee's recommendations.—ED. L.

STIMULANTS OF METABOLISM

To the Editor of THE LANCET

SIR.—My remarks in the annual oration of the Medical Society of London on May 13th concerning dinitrophenol and Dekrysil (4 : 6-dinitro-o-cresol) followed others on the need for caution in the use of cinchophen (Atophan). which has caused toxic jaundice in a number of cases seen by me personally. The nitrobenzene derivatives, such as trinitrotoluene, dinitrobenzene. dinitrophenol. and picric acid (trinitrophenol) have all been recognised as liver poisons and they, too. have caused numerous cases of toxic jaundice. Dinitrocresol (dekrysil) as regards its toxic action on the liver belongs to this group of drugs and it was for this reason that a note of warning was given by me.

Prof. E. C. Dodds. for whose scientific work I have a high regard. strongly emphasised in his published papers the need for great care in the therapeutic use of dekrysil and was obviously fully aware of possible dangers from over-dosage. The case quoted by Dr. Wilfrid D. Newcomb in your issue of June 1st (concerning which I was consulted) fully confirmed the dangers to the liver and kidney from over-dosage, such as would be likely to occur in a young dancer for whom the urge for slimming was great ; there was no suggestion of suicide in this case. The liver and kidney cells showed remarkable degenerative changes.

Cases of disturbing symptoms from the use of dekrysil have been brought to my notice and it appears that certain persons are highly susceptible to this drug. as is known to be the case with dinitrophenol. Prof. Dodds wisely advised that its action should be controlled by determinations of the basal metabolic rate and careful medical observation of other symptoms. This supervision. however, is only really effective in hospital or nursing-home. It is doubtful if patients suffering from obesity and carrying on their ordinary avocations can be trusted to obey implicitly the injunctions of their medical advisers as regards dosage when their weight is not falling as rapidly as they desire. It is here that the danger comes.

I am, Sir, yours faithfully,

WILLIAM H. WILLCOX.

Welbeck-street, W., June 11th.

To the Editor of THE LANCET

SIR.—Prof. Dodds and Dr. Robertson in your issue of May 25th. commenting on Sir William Willcox's reference to the use of dinitro-o-cresolin the treatment of obesity, . state that provided a careful watch is kept on the patient and the basal metabolic rate is measured frequently, there is no danger in its use. Our experience with dekrysil at Kasr-el-Aini Hospital. results of which have been published elsewhere,[1] show that the B.M.R. is not an accurate index to the toxicity of the drug. We have encountered cases which showed grave toxic symptoms (severe vomiting, giddiness. cold sweats. low temperature 35·5° C., and other features of collapse. followed later by a rise of temperature to 40° C. and then a gradual return to normal in a week's time). with a B.M.R. of ÷ 34 per cent. only, whereas in other cases. the B.M.R. has reached ÷ 77 per cent. with trivial or no toxic symptoms at all. Our impression. after a fairly extensive trial. is that dekrysil as a weight-reducer is exceedingly disappointing. and is not free from danger.—We are, Sir, yours faithfully,

MOHAMED IBRAHIM, M.D., M.R.C.P.
HOSNY AYAD, M.B.

Medical Section, Kasr-el-Aini Hospital, Cairo.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING WEEK ENDED JUNE 1ST, 1935

Notifications.—The following cases of infectious disease were notified during the week : Small-pox. 0 ; scarlet fever. 2093 ; diphtheria. 971 ; enteric fever. 32 : acute pneumonia (primary or influenzal). 1118 ; puerperal fever. 42 : puerperal pyrexia. 119 ; cerebro-spinal fever, 15 ; acute poliomyelitis. 7 : acute polio-encephalitis. 4 ; encephalitis lethargica. 3 ; dysentery. 38 : ophthalmia neonatorum. 94 ; No case of cholera. plague. or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals for the London County Council on June 7th was 2977. which included : Scarlet fever, 943 ; diphtheria. 1155 : measles. 28 ; whooping-cough, 375 ; puerperal fever, 30 mothers (plus 11 babies) ; encephalitis lethargica. 269 : poliomyelitis. 3. At St. Margaret's Hospital there were 16 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns. including London, there was no death from small-pox. 2 (0) from enteric fever. 16 (0) from measles. 7 (0) from scarlet fever. 20 (3) from whooping-cough, 33 (2) from diphtheria. 41 (15) from diarrhœa and enteritis under two years. and 58 (8) from influenza. The figures in parentheses are those for London itself.

Beckenham and Sheffield each reported one fatal case of enteric fever. Three deaths from measles occurred at Liverpool and at Wigan. Sheffield reported 4 fatal cases of diphtheria. Liverpool 3. no other great town more than 2. Of the deaths attributed to influenza 5 occurred at Bradford, 4 at Birmingham.

The number of stillbirths notified during the week was 282 (corresponding to a rate of 41 per 1000 total births.), including 40 in London.

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[1] Ibrahim. M.. Ayad. H., and Mahdi, M. : Jour. Egypt. Med. Assoc.. 1934. xvii., 968.

INFANTS HOSPITAL. VINCENT-SQUARE.—The income of this hospital for the past year was £18,287 and the expenditure £18,965. The hospital now contains 100 cots and seven separate rooms for nursing mothers. The building extension scheme was completed in the autumn.

OBITUARY

WILLIAM STUART-LOW, F.R.C.S. Eng.

CONSULTING SURGEON, CENTRAL LONDON THROAT AND EAR HOSPITAL

We owe the following memoir to Sir James Dundas-Grant: "William Stuart-Low's death from heart failure following influenza was the end of a very remarkable career. He was born at Burntisland, in Fife, in 1857. His father was in the scholastic profession and doubtless bequeathed to him the capacity for teaching which displayed itself when he joined the staff of the Central London Throat and Ear Hospital. Intended for the veterinary profession, he was attracted to that of medicine and was able to qualify in 1884 as Licentiate of the Royal College of Physicians of Edinburgh. According to his own story, having his way to make, he started practice in a working-class neighbourhood in the south-western district of London, taking also a resident patient into his house to help towards the necessary expenses. He then migrated to the more desirable surroundings of *Herne Hill* where he had the good fortune to meet a lady of both personal and intellectual attractions, who became his wife. She added greatly to the brightness of his life and he afterwards spoke of her as the 'best friend he ever had.' While in busy practice he made time for preparing for the Fellowship of the Royal College of Surgeons of England, absorbing with avidity both the academic teaching and the *obiter dicta* of those from whom he sought instruction. He was particularly inspired by the teaching of the late Wm. Anderson, surgeon to St. Thomas's Hospital, for whose anatomical accuracy and surgical refinement he had the greatest admiration.

MR. STUART-LOW

"In 1903 he was appointed to the staff of the Central London Throat and Ear Hospital at the age of 46. Both there and at the Polyclinic—the Medical Graduates' College in Chenies-street, W.C.—he made his mark as a teacher and thereby added considerably to his success in consulting practice. Curiously, he was guided more by his *perfervidum ingenium* than by the Scotch tendency to rely on strict logical reasoning. It may be said that his methods were inductive rather than deductive, and he had original views which when tested in his own practice had a remarkable measure of success. His insistence, for instance, on the value of mucin in cancer of the throat may not be universally accepted, but there can be no doubt as to the relief afforded by the use of his preparations. His use of horse serum in the irrigation and dressing of operation wounds was an original idea, but it appears to have its equivalent in some modern methods of treatment. He devised a number of details in dressing, fixing, and dealing with operation cases, which afforded evidence of his originality.

"At the Royal Society of Medicine he was a very regular attendant, though he did not show many cases. His remarks, however, were at times inspired by his difference of opinion from that of some previous speaker. He then expressed himself with deliberation and emphasis, and if he appeared to be unnecessarily downright in his utterance it was probably because he had formulated in his mind what he had to say tersely and without the frills with which too many speakers embellish their statements.

"Stuart-Low was powerfully built and endowed with exceptional physical vigour. An unusually early riser, he took a pride in performing his operations when others had not yet breakfasted. In spite of his commanding figure he tended on the whole to be shy and reserved, and the sensitiveness of his disposition was known probably to only a few. He was not a prolific writer, but he put forward his views with decision and happy phraseology. His work on 'Mucous Membranes, Normal and Abnormal, including Mucin and Malignancy,' published in 1905, amply illustrates the characteristics of his vigorous modes of thought.

"To the writer he was ever a loyal friend, whether as pupil, assistant, or colleague, and he and many others with him will greatly miss Stuart-Low and deplore his decease. He is survived by his widow and a son and daughter."

J. D.-G.

PANEL AND CONTRACT PRACTICE

Study Courses at Hammersmith

We have already noted that the British Post-graduate Medical School is arranging during the coming summer intensive "refresher" courses for general practitioners. The first of these courses, of which full details will be found in our advertisement columns, opens next Monday, *June 17th, and* as only a limited number can be admitted to one course early application for the later courses is recommended. Here it is appropriate to consider the circumstances in which certain insurance practitioners may receive financial assistance towards such study. Assistance is made by way of grants from the special expenses portion of the central mileage fund, and it must be shown that the doctor (1) has been in practice other than hospital practice at least one year before the date of application; (2) practises in an isolated or sparsely populated rural area and has no reasonable access to a town in which hospital practice is available and meetings of medical societies can be attended; and (3) is unable, without assistance, to afford the cost of a course of study. Recommendations are made to the Ministry of Health not later than the end of February in each year jointly by the insurance committee and the panel committee which must satisfy themselves that applicants fall within the terms of eligibility. Applications for a further course would be entertained after an interval of five years, unless special reasons are advanced for a repeat course at a shorter interval. The available fund is limited, and applications from any area are considered in relation to those from the country as a whole. Normally the grant would not exceed £20, but in exceptional cases the whole cost may be met (subject to prescribed maxima under each item) for subsistence expenses, travelling expenses to the nearest suitable centre, course fees, and the engagement where required of a whole-time locum tenens.

It should be borne in mind that the scheme is restricted to insurance practitioners in rural districts, and it is, presumably, now too late to apply for assistance for the year 1935, although in view of the new situation created by the opening of the Hammersmith school it might be well to test this.

Refusal to Visit: Charge Rebutted

A London insurance practitioner was recently charged with having failed to visit a patient on request. The complaint was that the woman having been discharged from hospital became ill the same evening and requested a home visit on the following morning, but the practitioner declined to come and the services of another doctor were obtained.

The practitioner pointed out that he had received a telephone message from the house physician to one of the honorary staff of the hospital to the effect that the patient had discharged herself voluntarily, that she had been in bed for two weeks, had been examined by the "honorary" personally, had had numerous X rays taken, and every conceivable pathological test, all with negative result. The hospital authorities had told her, she was not ill but had advised her to remain a day longer to get used to being out of bed. The practitioner having attended her at home or at his surgery 43 times during the previous 12 months without ever finding any sign of physical disease agreed with the opinion of the house physician that while there might be a neurotic element in the patient's condition she was not physically ill. Next morning he received a clinical report from the hospital and soon afterwards a message from the patient's mother asking for a home visit. Being engaged with another patient he sent a message to the mother that he had been informed by the hospital that her daughter was not ill, but if she wished to see him she could come to the surgery—less than two minutes' walk. The mother sent a further message that the patient was ill and needed attention, to which he replied that he was engaged but would be prepared to see the mother in half an hour's time. No further application was made for his services.

Unfortunately the patient was ill this time. The other doctor who was called in found her suffering from a febrile attack with pain in her back, vomiting, headache and general malaise, and unfit in his opinion to leave the house. Although (in the words of the subcommittee's report) she "gave a lengthy history of various illnesses from which she had suffered in the past," it might well have been held that the practitioner had committed a breach of Section 9 (5) of the terms of service in failing to visit a patient whose condition so required, but the committee took the view that the previous history of the case, coupled with the message from the hospital and the clinical report, doubtless prompted the practitioner to regard as unreasonable the request for a home visit within 24 hours after the patient had voluntarily discharged herself from hospital. Although the practitioner had offered to interview the mother within half an hour another doctor was called in and no further attempt was made to obtain the services of the responsible practitioner. The committee found that there was no failure on the part of the practitioner to comply with the terms of service and that the cost of treatment obtained from the second doctor was not reasonably and necessarily incurred.

The case was dealt with under 6 (1) (b) of the rules for the administration of medical benefit; when the subcommittee are of opinion that the case is one which can be disposed of on the written statements of the parties, and both parties agree, there is no hearing.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Whitsuntide Adjournment

THE House of Lords adjourned for the Whitsuntide recess on Thursday, June 6th, until June 17th. The House of Commons adjourned on Friday, June 7th, until June 17th.

The Housing Bill in the Lords

On June 5th in the House of Lords Viscount HALIFAX, President of the Board of Education, moved the second reading of the Housing Bill. He said that the suspension of building during the war, the dislocation of labour and material supplies which followed the war, the suspension of emigration, and the steady increase of population amounting to some 2,000,000 persons between 1921 and 1931, taken together with the need of improving then existing conditions had been the occasion of a whole series of Housing Acts and of the provision of something like 2,500,000 houses between 1919 and 1934, estimated to give accommodation to some 7,000,000 persons. But all that great provision of houses had made no more than a negligible contribution towards the solution of the worst housing evils—namely, slums and overcrowding—for the reason, he supposed, that they had failed to define their objects with sufficient clearness and to satisfy themselves that they had adequate powers to achieve them. It was the recognition of that fact that had induced the present Government for the first time, he believed, in the history of housing reform to try to attack the problem on what they believed to be more definite and more logical lines. In that policy the Government had accordingly sought to proceed by three quite distinct and consecutive stages. The first stage was taken in 1933 when they withdrew the subsidies for new houses at large, thus liberating as far as possible the instrument of private enterprise from the shackles of subsidy competition and ensuring that where subsidies were still essential the available public money should not be dissipated but should be used only where the principal object of getting houses of the right sort and in the right place could not be achieved without them. The number of houses that were built by private enterprise in the half-year ending in March, 1934, was over 120,000; in the next six months it was 137,000; and in the six months recently ended it was just on 150,000. That last figure represented a total of about 300,000 houses a year, which compares with an annual total of about 200,000 before the passing of the 1933 Act, and it was interesting to add that this figure of 300,000 houses a year was estimated to include not less than 100,000 Class C houses. Those figures were sufficient justification of the policy that the 1933 Act embodied.

Generally speaking, present-day building costs and rates of interest when taken with the Exchequer subsidy under the 1930 Act made it possible to charge an inclusive rent of not more than 10s. a week, and many local authorities charged rents well below that sum. There was a provision in this

Bill for the unification of housing accounts which it was anticipated would in future give local authorities freedom to use the resources which they obtained from the Exchequer to the greatest possible advantage; and further, the Bill expressly recognised the duty of granting rebates of rent to persons whose financial position rendered that course necessary and justifiable. The second stage in the housing policy of the Government was to apply the Act of 1930 to a definite five-year programme of slum clearance. Here, again, he thought they might claim that the campaign against the slums had been so far an unqualified success. The number of houses promised by local authorities since the policy was launched had been over 100,000, and he believed that well over 26,000 were actually under construction at the end of April last, and there was every reason for thinking that the five-year plan for replacing houses in which people ought not to be asked to live by houses in which they might take some pride would be carried out in five years, except in such areas as London, where it had always been recognised that the amount of work to be done must require a longer time.

The third stage in the Government's housing policy was that which dealt with the problem of overcrowding. It was with that aspect of the question that the present Bill was designed to deal. The Bill laid down a standard based on the two obvious principles that proper separation of the sexes should be observed and that the houses should not be occupied by more people than they could properly accommodate. He was convinced that no lower standards than those set out in the Bill could secure the objects which the Government had in view. To those who might object that the standards prescribed were too low, he would point out that those standards represented neither the ideals of the Government nor the realities which in most cases would no doubt be attained. He suggested, however, that in the application for the first time of penal standards it was necessary to temper zeal for what might be with a practical recognition of what was; and that it would be for the national conscience to show that they were obsolete. To meet criticism which had been made in some quarters he would point out that the standard on which new houses were to be provided was not the penal standard of this Bill but the much more liberal standard laid down in Section 37 of the Act of 1930. These standards were intended to be for general application, but it was recognised that some discretion must be allowed in their application. The first part of their task then was the preparation of standards; the second was to see that such standards were enforced; and the third, and most important, without which enforcement would obviously be impossible, was the provision of suitable alternative accommodation.

The Bill was read a second time.

University of Durham Bill

Viscount HALIFAX presented a Bill to make further provision with respect to the University of Durham and its constituent divisions and colleges.

The Bill was read a first time.

Voluntary Hospitals (Paying Patients) Bill

The Voluntary Hospitals (Paying Patients) Bill was read the third time and passed.

Bills Advanced

On June 6th, in the House of Lords, the Restriction of Ribbon Development Bill and the Unemployment Assistance (Temporary Provisions) (No. 2) Bill were read the third time.

In the House of Commons on June 5th the Government of India Bill was read the third time.

National Health Insurance Bill

In the House of Commons on June 6th Sir HILTON YOUNG, Minister of Health, moved the second reading of the National Health Insurance and Contributory Pensions Bill. The measure, he said, was one of great social importance to very wide classes in the country. The great depression had affected the whole basis of the National Health Insurance scheme adversely. How adversely the scheme had been affected by the general depression and the unemployment was closely revealed on the occasion of the Third Valuation, when the Government actuary's report disclosed that, owing to the diminution in the contribution income on account of unemployment, great evils were impending over the National Health Insurance system. Many of the approved societies were threatened with being driven down into a deficiency, and it became urgently necessary to take emergency measures to protect the basis of National Health Insurance for the preservation of its solvency and of the contributory principle. Had such measures not been adopted National Health Insurance would have followed the course of unemployment on its downward track which would have led to complete financial disaster. At that time, also, owing to the general adverse state of the national finances, the Exchequer was unable to give any exceptional and additional financial assistance to the National Health Insurance scheme, and for that reason the scheme had to be fortified and rebased without help from outside. That was done by the Act of 1932. What were the measures taken in 1932 to protect health insurance and its continuance from the evils which then threatened it owing to the great depression

In the first place, it was found impossible to continue some of the special concessions made to the unemployed in easier financial times. It was found impossible to continue them indefinitely from year to year, owing to the fact that the unemployed had been for a long period unable, on account of their unemployment, to make their contributions to the scheme. Secondly, it was found impossible to continue the system which had been introduced in 1928 for the further relief of the unemployed—the system under which the unemployed were credited with all arrears of contributions due to unemployment, so that in weeks of unemployment they were excused all contributions and the arrears which subsequently arose in their contribution records had no effect in reducing their cash benefits in the subsequent contribution year. That was the second concession which it was necessary partially to diminish in 1932 by going back on the 1928 arrangement to the extent that only half of the contributions due to unemployment were thereafter excused. That meant a relief of £1,500,000 a year in the finances of the approved societies.

SICKNESS EXPERIENCE OF WOMEN

There was another matter which was dealt with on a rather different footing. The experience of the sickness of women under the scheme had been found to exceed expectations so that on an actuarial basis the scheme was unable to maintain the benefits it was originally designed to maintain. Action was taken to protect the finances of the scheme by reducing the benefits to women to the amount which actuarially the scheme was capable of maintaining. That stood on a different basis; it was not directly related to the bad times. The subsequent experience of women's sickness had tended to confirm the forecast that was then made and to justify the reductions as being sound in relation to the actuarial aspects of this scheme, and it was not now proposed to make any further change in the particular matter of women's benefits.

In the health part of the scheme, said Sir Hilton, the structure was underpinned, but at the same time they had protected the highly valued pension rights from any source of interference. All the unemployed were continued in pension rights until the close of the current year, that was until Jan. 1st, 1936. Such was the state of affairs which was left by the Act of 1932. Speaking on behalf of the Government at the time of the passage of that Act he had said that if and when there was an improvement in national conditions sufficient to make it possible to reverse any part of the then withdrawal of concessions it would be the duty of the Government to again propose concessions of that sort. The review of the decennial period had now been received from the Government actuary. He did not want in any way to exaggerate, but the state of affairs was marked by one clear characteristic, and that was a very great improvement in all those factors of national prosperity which were relevant to the Government of national health insurance and pension schemes.

The optimists of three years had been justified, and within the time of the decennial review they were able financially to reconsider the steps it was necessary to take in order to preserve the solvency of this scheme and protect the benefits of the insured. The unemployment figure, the underlying factor, which was then approximately 2,750,000 on the live register, now stood at approximately 2,000,000. The reduction of 750,000 persons was reflected in the finances of the insurance scheme by this most vital circumstance that the contribution increment available to the scheme between 1932 and 1934—the last year with regard to which he had the figures available—increased by £2,375,000 a year, a most encouraging circumstance and one which enabled them to take a different view of the state of affairs from that which it was necessary to take at the time of the great depression.

CONCESSIONS JUSTIFIED BY NATIONAL PROSPERITY

Another circumstance of very great significance in the general restoration of prosperity was the stabilisation of our national finances and the balancing of the budget. In the present Bill the Government fulfilled their undertaking by dealing with the pensions scheme before the beginning of 1936. They found themselves in a position to go back and to continue in national health insurance those who fell into unemployment from year to year without those limitations which on the previous occasion it was necessary to adopt. The result would be that they would secure to all one and three-quarter years on an average free insurance which was at present secured upon the termination of insurable employment. At the close of that period of free insurance, which everybody had, they dealt with the unemployed in this manner. Subject to a certain qualification, those who were unable to maintain their contributions by reason of unemployment would be maintained in insurance year by year if unemployment continued. Thus, if they were still unable to get work and so pay contributions, then, if unemployment was the cause of their contributions not being paid they would be continued in insurance from year to year indefinitely. (Cheers.) The continuance would not secure health insurance cash benefits. The benefits secured were medical benefit and additional treatment benefits, including institutional benefits of a medical sort.

Viscountess ASTOR asked if maternity benefit was secured.

Sir HILTON YOUNG: No, that is a cash benefit. Pension and medical benefits are secured indefinitely from year to year.

Persons who under the Act of 1932, owing to unemployment, had to have their health insurance benefits discontinued, were they, he asked, to be left out? The number involved in round figures was about 200,000 persons. A certain number had passed out of insurance already, and a certain number would come back again owing to re-employment. It was difficult to estimate how many, but on Jan. 1st next approximately 200,000 would be passing out of insurance for all purposes unless they were helped. He was fortunately now in a position to take power to make transitory regulations under the Bill which would enable him to prevent those who were going out of insurance on Jan. 1st from doing so and to bring all those who had gone out of insurance owing to unemployment back into insurance.

The condition for the continuance of insurance was that there should be ten years of continuous insurance when work ceased. Did this mean that many unemployed would be unable to be continued in insurance because they could not make good? The answer was No. Owing to successive Acts for continuance in insurance all unemployed persons with four years' continuous insurance and 160 contributions had in fact been continued in insurance from year to year. So that, generally speaking, the unemployed would not find any difficulty in fulfilling this qualification. It might be inferred from the actuary's report that not more than 9 per cent. of the 200,000 persons to whom he had referred would fail to qualify under the 10 years' condition. The actuary estimated further that at least half of those would come back to employment within a short time. So that it was only about 5 per cent. of the 200,000 who would fall out of insurance for more than a short period. These would not only be people who were going out because of unemployment, but they would include people going out for different reasons, such as taking up uninsurable employment. But for the most part they would be young people with good prospects of coming back to insurance again. They retained the concession given in respect of pensions under the Act of 1932, that was an additional year of cover for pensions for those whofailed to satisfy the ten years' test but had a four years' record of continuous insurance.

DEALING WITH ARREARS

What could they do, Sir Hilton continued, under the arrears part of the scheme. Fortunately they were now in a position, as it were, to let out the slack they had to take up in 1932, and they were able with the increased contribution income and some financial help to go back to the full excusal of arrears, so that all arrears of contributions due to unemployment would be fully excused and would have no effect at all upon the cash benefits of the unemployed, as it was before 1932 and after 1928. That would mean a very great benefit on the cash side to millions of insured persons—something between 4,000,000 and 5,000,000 persons—and it would also certainly mean an enormous simplification of administration and saving of expense to the approved societies. Arrears for the year 1934–35 due to unemployment would be fully excused.

Mr. E. WILLIAMS: Excusal of arrears does not apply to 1933?

Sir HILTON YOUNG: No to 1934–35, so that for the current year it is retrospective to that extent.

There was another advantage to be derived. Many approved societies made use of surpluses to pay up arrears and so enabled the unemployed to get their cash benefits. Now that they were excusing their arrears those moneys would be released for additional benefits.

It would mean something like £300,000 a year to be released for additional benefits—a by-product of the main scheme. The finances of this proposal were simple. The Actuary's report on the decennial period showed that they could give this continuation of pension rights for the unemployed from year to year indefinitely in the manner he had described, and give it now in view of the existing state of the fund the reserves of which would be adequate until the next decennial period, 1946, and no further money would be required to finance this concession until that period. In 1946 the House could make fresh arrangements for Exchequer contributions to the pension fund, but until that period no fresh finance would be required. He would remind the House that under existing law there would be an automatic increase in the contributions for pensions at the end of the present year of 2*d*. for men, equally distributed between employer and employee and 1*d*. for women. A sum of about £1,500,000 a year was required to finance the excusal of arrears due to unemployment, and this included the much smaller sum necessary to finance the medical benefits for those who were continued in extended insurance.

The Government proposed to distribute the financial burden between the approved societies and the Exchequer, half being found by the approved societies and half by the Exchequer. They would find about £700,000 or £750,000 each. The form of the finance of the scheme was a pound for pound arrangement between the Exchequer and the approved societies. The approved societies met the burden by a general levy on contributions. The effect was to bring the societies with less unemployment to the assistance of those with more unemployment. For the first year they were able to finance the Exchequer contribution by appropriating a balance from the army, navy and air force fund.

Mr. Neil Maclean said that to the intentions of the Government as explained by Sir Hilton Young he took no exception, but in the opinion of the Labour party more might be done for those to whom the Minister of Health desired to give security of pension and security of benefits.

Mr. Graham White said that the Liberal party welcomed the Bill and they hoped that it might become law quickly with such modifications as might be necessary.

Mr. Morgan said the House ought to give particular attention to the way in which insured persons were treated. Generally speaking they were treated remarkably well, but there were cases of patients who were treated rather in a "panel" sort of way which the Minister might investigate. He did not know whether these panel doctors had too many patients on their lists, but these poor people had grounds for grumbling when they had to sit for a long time and get no proper treatment at the finish.

The Deputy Speaker (Sir D. Herbert) said that point could not be developed in this debate.

Mr. Llewellyn-Jones said the Minister had referred to the fact that he hoped not only that medical benefit would now be available to all men and women who had gone out through unemployment but that they would also be entitled to the additional treatment benefits. There was reason to anticipate that there might be difficulty in this connexion. The surpluses which would otherwise be available for members of approved societies would naturally be reduced as a result of the contribution of £750,000 a year by the approved societies towards the finance of the Bill. It would then be made more difficult for the societies to give the additional treatment benefits which everyone recognised were essential if medical benefit was to serve the purpose that it ought to serve. Take for instance the case of dental benefit. Unfortunately a large number of societies had already failed, owing to the drop in their reserves, to give any more dental benefit. He hoped that this or some future Government would deal with the situation on broader and more generous lines.

Viscountess Astor thought that the Minister should have made a greater provision for maternity benefit. She implored the Government to see whether they could not extend the period for maternity benefit even when the other cash benefits had come to an end.

Mr. Janner said that the suggested concession on maternity would not cost much money. There was considerable anxiety about insured persons being unable to obtain the right kind of specialist medical and surgical advice and that specialist treatment and diagnostic advice were not available for the insured person. In 1926 a large amount of money was diverted from the fund which was available for the purpose of supplying insurance benefits to those who came within the provisions of the Acts. He was sorry that it had not been found possible to give back a larger proportion of that sum in order to provide additional benefits. Health insurance funds were no longer yielding the same amount of interest as they did formerly and the Exchequer might well be called upon to contribute a larger amount.

Mr. Banfield said that hundreds of thousands of people had been looking to the Government to raise the income limit of insurability. If the Government were really going to do something big in the way of national health insurance they might consider this class of people above the £250 a year limit—the small shopkeeper and professional people—who declared that they could never see any reason why they were not given the opportunity to contribute to old age pensions and health insurance.

Mrs. Tate said there was a good deal to be said for Mr. Banfield's suggestion to overhaul the whole matter of national health insurance. She wished that the Minister could grant maternity benefit to the unemployed. The claims of women on the health insurance fund might be less severe if they could know that during a very anxious period in their lives they were still to draw their maternity benefit.

Sir Francis Fremantle said that such benefits as this Bill introduced were a hazard banking on the fact that we were probably going to move along the road to prosperity. Honest critics of this Bill would recognise that it could not have been introduced earlier because they were waiting for the report of the actuary and for the statistics from 1925 to 1932 on the working of the insurance system. This Bill had the great advantage of producing a more uniform, sensible and business-like system of administration. It also set up reasonable conditions under which the insurance status could be maintained. He joined with those who wished that it were possible to provide further maternity benefit, but again that was a question of expense, as it was with other benefits, including medical benefit. He wondered if the Minister had it in his mind to bring in during the autumn, and in the last session of this Parliament, that Maternity Bill of which they had heard so much, and whether it would be possible in that measure to make maternity provision for all the insured people. There was also a general feeling in regard to ordinary medical benefit—he was not now speaking of the cash benefit—that it was a hardship that the insured person should have to leave the doctor of his choice, who was used to him, and to whom he was used, and to go to the public assistance doctor, and then later on back to his own doctor. Now that they were accustomed to the panel doctor and public assistance system some arrangement ought to be made which would apply equally to insured and non-insured persons as regarded medical benefit and treatment, and he hoped that there would be such an arrangement before very long.

Mr. Clarke appealed to the Minister to insert a clause in the Bill to provide for the insurance of boys and girls between the ages of 14 and 16. At present, he said, there was no organised provision for the medical treatment of boys and girls between these ages. Secondly, this was a critical period of growth when neglect might cause irreparable damage. Boys and girls were subject to considerable strain when they first entered employment. Thirdly, the examinations by certifying surgeons under the Factory Acts were confined to a section of the juvenile population and were merely designed to prevent boys and girls with health defects from entering industrial employment; there was no provision for remedying any of the defects discovered. Fourthly, unemployed boys and girls joining junior instruction centres and classes might be treated by school medical officers and it seemed anomalous that the unemployed in this respect should be provided for while the employed were not.

Dr. O'Donovan said that Parliament entrusted a great deal of the financial help of the sick to the approved societies; but such societies once they had the millions of the public in their custody husbanded those millions with a care that had the full approval of the Treasury, but was often a source of grave disquiet to the doctors and to the sick throughout the country. Ordinarily a medical certificate was given in good faith to a sick person, but the impish ingenuity of the skilled advisers of the approved societies could see many outlets for the unwary disbursement of public money through medical certificates written in good faith but without lawyer-like skill; and while those difficulties were being cleared up by leisurely correspondence the sick person often waited weeks for the financial assistance that was so pressingly necessary to him. When the sickness became a matter of litigation so that the approved societies and the insurance companies, both having skilled professional advisers, were set in opposition to one another the needy sick person might wait weeks and months for any assistance from either side until the eminent lawyers and specialists, with the help of the judiciary had come to some conclusion and then only were his needs met. It was occasionally possible for the two sides to come to some temporary compromise as to which should pay in the interim, but he noticed in his work, and many of his brothers also noticed, that when the House of Commons wished to help the sick instantly the skilled professional advisers of approved societies carrying out their very proper work of the custody of their funds, put a very high barrier between the poor sick man and the money that he might have.

They had been told that it would be advisable for additional benefits to be granted. It had been suggested that these additional benefits might be maternal benefits and dental benefits, but he would put in a prior plea before these that specialist advice be made more available through the Ministry of Health for panel doctors up and down the country. It was not dignified or proper that this service should depend for its ultimate efficiency upon the free advice of consultants up and down the country. The more the panel system was improved and extended and the more medical benefits were extended among the poor people, the more patients would be found to need specialist advice. The out-patient departments of all the great hospitals were being more and more crowded by patients sent to them in pursuit of their proper aims by doctors whose work was safeguarded and increased by this amending Bill. Before they considered dental benefit they might turn their minds to the extension of maternity benefit.

There was, said Dr. O'Donovan, one other matter to which he would like to refer. If the age-groups of population in this country were to change greatly the actuarial provisions for extended benefit would be rendered very shaky. If they were to have therefore through a fall in the birth-rate an increasing aged population then their figures that night were based upon a shifting basis. He would very much like to hear from the Minister if the change in the birth-rate and the change in the age-groups of the population, which were referred to repeatedly in specialist papers on this matter, were constantly and frequently under review by his actuarial advisers.

CONSOLIDATION OF HEALTH INSURANCE ACTS PROMISED

Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replying to the debate, said that with regard to the question of the gap in insurance between the ages of 14 and 16 he was in sympathy with the demand for medical benefit. They would all like to see that gap removed, but they had not the finances to do it at the moment, and they must leave something for posterity. The Minister authorised him to say that it was the intention of the Government to consolidate the Health Insurance Acts as soon as possible. That would be to the benefit of everybody.

The Bill was read a second time and committed to a Committee of the whole House.

HOUSE OF COMMONS

WEDNESDAY, JUNE 5TH

Malaria in Ceylon

Captain PETER MACDONALD asked the Secretary of State for the Colonies, whether his attention had been called to the fact that the total number of deaths from malaria in Ceylon amounted to 82,637 for the six months November to April; and what special steps had been taken by the government of Ceylon to deal with this emergency.—Sir PHILIP CUNLIFFE-LISTER replied: I have not yet received reports from the Governor of Ceylon covering the period referred to in the question. As regards the special steps taken by the Government of Ceylon, I would refer my hon. friend to the full reply which I gave on March 27th. Since that reply was given the special officer whom I then mentioned, Colonel Gill, has arrived in Ceylon and is engaged in carrying out his investigations.

Play-streets for Children

Mrs. RUNGE asked the Minister of Transport, if he would consider taking steps to effect the closing of certain streets to traffic in the poorer districts of the towns for two hours an evening in the summer-time, so that the children could play in them without risk of accident.—Mr. HORE-BELISHA replied: I have, in collaboration with the Metropolitan boroughs of Southwark and Paddington, arranged, by way of experiment, for six streets to be set aside as play streets for children and I have given notice of my intention to make regulations closing these streets to through traffic.

Medical Examinations at Barlinnie Prison

Mr. LEONARD asked the Secretary of State for Scotland if he was aware that prisoners who had been admitted to Barlinnie about 1 P.M. were, after reception formalities, placed separately in extremely small cubicles and frequently kept there for several hours pending examination by the medical officer; that the cubicles referred to had no conveniences necessary for such extended occupancy; and if he would ensure that in future medical examinations would be expeditiously made or more suitable accommodation provided.—Sir GODFREY COLLINS replied: Prisoners received at Barlinnie about 1 P.M. are kept in small cubicles until medically examined. Untried prisoners are examined at 2 P.M., but the examination of convicted prisoners is sometimes deferred until 3.30 P.M. I am satisfied that there is no undue delay in conducting the medical examinations, and that otherwise the arrangements are adequate.

Scabies at Barlinnie Prison

Mr. LEONARD asked the Secretary of State for Scotland how many long-sentence-prisoners in Barlinnie prison during the last 12 months had contracted scabies after completing several months of their sentence through contact with dirty closet seats; and if he would take steps to ensure that the cleansing of closets was more effectively performed.—Sir GODFREY COLLINS replied: During the past twelve months no prisoner in Barlinnie Prison has contracted scabies from the cause mentioned. The accommodation in question is subjected daily to a scrupulous cleansing and is regularly inspected.

Mr. LEONARD: If I give the right hon. gentleman some details will he go further into the matter?

Sir G. COLLINS: Most decidedly.

THURSDAY, JUNE 6TH

National Health Insurance (Ophthalmic Benefit)

Sir JOHN WALLACE asked the Minister of Health, whether his department had now considered the final report of the ophthalmic benefit joint committee; and whether he proposed to introduce legislation on the basis of the Report.—Sir HILTON YOUNG replied: The Report to which my hon. friend refers is still under consideration. I regret, therefore, that I am not yet in a position to reply to the second part of the question.

Deaf and Dumb

Dr. ADDISON asked the Minister of Health whether he was prepared to introduce legislation giving to deaf and dumb persons similar benefits as well as facilities for training as were afforded to the blind under the Blind Persons Act.—Sir HILTON YOUNG replied: No, Sir. I am not satisfied that there is need for such legislation.

Inquiry into Nutrition of Children

Dr. ADDISON asked the Minister of Health whether he would publish the findings of the memorandum on the nutrition of children, prepared by the Economic Advisory

Council last year and any other Reports on kindred subjects submitted to his department which had led to the appointment of the special committee to report on the nutrition of the people, which had recently been announced. —Sir Hilton Young replied: As regards the memorandum of the Economic Advisory Council, I can only refer to the reply given to the right hon. Member by the Prime Minister in February (see The Lancet, Feb. 23rd, p. 466). As regards the rest of the question, the right hon. Member appears to be under some misapprehension. The Committee to which he refers is a standing advisory committee to assist myself and my right hon. friend the Secretary of State for Scotland with advice on problems of nutrition. It takes the place of a smaller and purely technical advisory committee which was appointed in 1931 by the right hon. Member for Wakefield (Mr. Greenwood) to perform the same service for the Ministry of Health alone.

Dr. Addison: Will the right hon. gentleman communicate to the House the information which led him to make this enlargement of the committee and ask the committee to conduct these wide researches?

Sir Hilton Young: I am always prepared on appropriate occasions to communicate all such information to the House.

Price of Milk Supplied to School-children

Mr. Thomas Williams asked the Minister of Agriculture the average price paid to producers and retailers for all milk sold to school-children.—Mr. Elliot replied: Milk supplied under the Milk in Schools arrangements brings to the producer who sells by wholesale the pool price for his region, less carriage and handling charges. The average pool price for the period from the inception of the arrangements up to the end of April was 13·59*d.* per gallon. The producer-retailer supplying milk for schools receives the actual wholesale price plus a distribution allowance of 6*d.* per gallon, and is charged the licensed retailers' contribution under the Milk Marketing Scheme. The average wholesale price for the seven months up to the end of April was 1*s.* 4·43*d.* per gallon, and the average producer-retailers' gross contribution was 2·51*d.* per gallon. The ordinary retailer's margin for distribution of school milk is also 6*d.* per gallon.

Burning Coal Bings

Mr. Neil Maclean asked the Secretary of State for Scotland whether he was aware of the complaints made in Lanarkshire against the coal bings which were burning there and because of the fumes which were a menace to the health of the people; and what action he proposed to take against the parties responsible.—Sir Godfrey Collins replied: The matter referred to is primarily one for the local authority under the Public Health (Scotland) Act, 1897. Only one complaint has been made to the Department of Health for Scotland in regard to burning bings in Lanarkshire. As a result of inspection the owners of this bing have undertaken to consider what action can be taken to extinguish the fire.

Alleged Ill-treatment of Defective Boy

Mr. Burnett asked the Secretary of State for Scotland whether his attention had been drawn to a case at the Aberdeen sheriff court, on May 23rd, in which a farmer was convicted of ill-treatment of a boy of 18 under his charge on licence from Rossie Farm School, Angus; whether he was aware that the boy was beaten on the body and legs with fists and with a stick, kicked on the body and legs, and submerged in a trough of water, and that the boy was stated to be on the border-line of a mental defective; and what steps were being taken to ensure that boys sent out from a reformatory on licence were protected from such brutality.—Sir G. Collins replied: My attention has been drawn to this deplorable case and to the particulars stated. The employer has been convicted on the charge of assault and sentenced to two months' imprisonment. With regard to the last part of the question, the managers of approved schools maintain close touch with the young persons who are released on licence. In this case I am informed that the headmaster of the school wrote to the boy six times during the seven months period of the boy's employment at the farm. Only one reply was received and it contained no complaint. Various reports were received from the employer none of which contained any indication of serious difficulty. The headmaster of this school, who is a man of outstanding reputation in reformatory school work, has placed 1500 boys in satisfactory employment in the past 35 years and he has never before had a case such as this. I am having the records of employment of young persons released on licence from approved schools during the last ten years specially examined, in order to ascertain whether there is any general ground for instituting a more thorough and systematic supervision over such employments.

Birth-rate: Effect on Social Services

Dr. O'Donovan asked the Minister of Health what was the nature of the personnel and organisation within his department charged with the duty to watch and advise him upon the effects of the trend of the birth-rate upon housing and other social services in being or under discussion for which he was or might be responsible to Parliament.—Sir Hilton Young replied: As my hon. friend is aware, the Registrar-General, whose Department is within my ministerial responsibility, has under continual study the nature and direction of all the elements of population movement, the handling of which calls for general statistical experience, prior to their application to particular administrative problems. The Registrar-General is in frequent consultation with the principal officers of the Department with a view to the development of useful lines of inquiry and the satisfaction of particular needs; and data as to the general population prospects and the results of special studies are made available to them either in departmental papers or in the Registrar-General's standard publications. This material is applied to administrative questions in the case of any particular subject matter by the officers by whom I am advised in that connexion.

Housing Bill and the Minimum Size of Rooms

Mr. Joel asked the Minister of Health whether, in view of the proposal in the Housing Bill under which subsidies would be granted towards the construction of houses, he proposed to suggest to local authorities receiving such subsidy that bedrooms of less than 70 square feet should not be constructed, in view of the fact that under the Bill in question such rooms were only assessed at being fit for occupation by a child under 10 years of age.—Sir Hilton Young replied: No, Sir. The considerations affecting the standard of re-housing accommodation provided by local authorities and those relating to the penal standard proposed in the Housing Bill are quite different and the two standards cannot appropriately be correlated in the manner proposed.

Warwickshire and Coventry Mental Hospital. A large nurses' home has been opened at this hospital, providing accommodation for 21 sisters and 95 nurses. The cost has been £39,000.

Education for Gas Warfare.—Mr. Davidson Pratt, F.I.C., secretary of the Association of British Chemical Manufacturers, gave a lecture last Wednesday to the British Science Guild in which he urged that the civil population should be instructed in methods of defence against gas attacks in war, more especially from the air. Gas, he said, had a devastating effect on the morale of people ignorant of its properties and uninstructed in methods of defence, and a country's lack of preparation in this respect might well induce an enemy to attempt a speedy victory. Reduced to its elements, the scheme of defence required that the general public should keep out of contact with gas, whether as liquid or vapour, by staying in gas-protected rooms till the raid is over and the area cleared up, and that there should be an organisation for the de-contamination of the areas affected and the first-aid treatment of those who have been exposed to gas. The success of the scheme would depend entirely on the behaviour of the population, and it was therefore important that people should be imbued with the proper psychological reaction. Mr. Pratt believes that the destructive power of gas attack from the air has been grossly exaggerated.

MEDICAL NEWS

University of Oxford

On June 8th the degree of doctor of medicine was conferred on C. Raymond Greene, and of bachelor of medicine on J. E. G. Pearson.

University of Cambridge

The degree of Sc.D. has been conferred on Mr. Leslie Harris, D.Sc., director of the Medical Research Council's nutritional laboratory at Cambridge University.

Dr. C. H. Whittle has been appointed as delegate of the University to the ninth international congress of dermatologists which is being held in Budapest in September.

University of London

At recent examinations the following candidates were successful :—

THIRD EXAMINATION FOR M.B., B.S.

Honours.—J. R. Forbes (*a*), Guy's ; G. W. Hayward, (*a*, *b*, *c*, *d*, *e*, *Univ. Medal*), St. Bart.'s ; G. W. Hearn (*c*), St. Thomas's ; Edward McLellan (*d*), St. George's ; and James Marshall (*a*, *e*), London.

(*a*) Distinguished in medicine ; (*b*) distinguished in pathology ; (*c*) distinguished in forensic medicine and hygiene ; (*d*) distinguished in surgery ; (*e*) distinguished in obstetrics and gynæcology.

Pass.—E. C. Atkinson, St. Bart.'s ; H. H. Atkinson, Univ. Coll. ; Barbara Bailey, Roy. Free ; T. A. Baldwin, Univ. Coll. ; E. B. D. Bangay and D. S. D. Barber, St. Bart.'s ; G. W. Bender, St. Mary's ; Brenda G. Billings, Roy. Free ; G. L. Bohn, St. Bart.'s ; A. P. Booth, London ; P. I. Boyd, Univ. Coll. ; D. J. T. Brinkworth, Middlesex ; I. A. Cathie, Guy's ; R. M. Clarke, Middlesex ; C. W. J. Claydon, King's Coll. ; F. T. Clive, St. Thomas's ; V. H. J. Davies, Charing Cross ; D. W. A. Degazon, Univ. Coll. ; Audrey P. Dence, Roy. Free ; Leslie Dexter and P. E. Dipple, St. Bart.'s ; Lynette Dowsett, Roy. Free ; F. C. Durbin, St. Thomas's ; H. A. Eason, London ; Evelyn J. Forgan, Roy. Free ; J. F. A. Forster, Guy's ; Sheila M. Franklin and Joyce C. Goodchild, Roy. Free ; I. H. Griffiths, Middlesex ; W. E. Hadden, St. Thomas's ; Marjorie K. Hall, Roy. Free ; P. G. F. Harvey, St. Bart.'s ; D. A. B. Hopkin, St. Mary's ; A. [illegible] W. Houghton, St. Bart.'s ; I. H. Jenkins, [illegible] Johnston, King's Coll. ; A. E. Jones, G[illegible] Bart.'s ; J. G. Jones and W. L. Kerr, King's Coll. ; Abraham Lasnick, Univ. Coll. ; J. B. H. McArthur, Guy's ; J. J. McCann, St. Thomas's ; Arnold Moore, Univ. Coll. ; Elizabeth C. Morris, Roy. Free ; R. B. Morton, St. Thomas's ; R. F. Mowll, King's Coll. ; H. E. Offord, St. George's ; E. D. Page, St. Mary's ; H. S. Pasmore, Univ. Coll. ; Geoffrey Phipps, St. Thomas's ; D. S. Piper and A. G. Potts, Guy's ; Marjorie A. Powys, Roy. Free ; V. B. Reckitt, Guy's ; A. H. W. Roffey, King's Coll. ; K. B. Rogers, St. Mary's ; C. G. Roworth, J. G. Sheldon, and R. H. D. Short, Univ. Coll. ; Frank Summers, King's Coll. ; W. H. Summerskill, Guy's ; Margaret E. Sutherland, Roy. Free ; B. A. Thomas and D. M. Thomson, St. Bart.'s ; W. F. Townsend-Coles, London ; Enid L. Weatherhead, Roy. Free ; F. H. Weston, Guy's ; and C. W. K. Willard, Univ. Coll.

The following students have passed in one of the two groups of subjects :—

Group I.—Bernard Cates, St. Bart.'s ; Robert Cox, Westminster ; Kathleen Craddock, Roy. Free ; J. V. Dacie, King's Coll. ; A. M. Desmond, London ; W. J. M. Evans, Univ. Coll., Cardiff ; H. C. H. Higginson, St. Bart.'s ; C. E. W. Hoar, Westminster ; Tobias Levitt, Middlesex ; W. N. Mann, Guy's ; R. L. Moody, St. Thomas's ; Margaret J. Moore, Roy. Free ; C. J. S. O'Malley, St. Thomas's ; G. H. C. Ovens, St. Mary's ; F. D. Paterson, St. Mary's ; Millicent I. Rowland, Roy. Free ; J. K. Samuel, St. Thomas's ; Catherine M. Whitestone, Univ. Coll. ; and B. L. E. Wong, Guy's.

Group II.—Mary J. Bartlett and Beatrice A. Blake, Roy. Free ; C. J. F. Blumenthal, Guy's ; Margaret Brodigan and A. M. Cusack, Univ. Coll. ; Dorothy S. R. Drew, Roy. Free ; J. A. C. Franklin, St. Thomas's ; L. D. B. Frost, St. Bart.'s ; Philip Glazer, King's Coll. ; J. R. Hill, St. Bart.'s ; J. H. Lawrence, Univ. Coll. ; J. I. Lesh, St. Thomas's ; H. M. McGladdery, St. Bart.'s ; Margaret I. McHaffie, Roy. Free ; J. I. C. Mason, St. Bart.'s ; Margaret J. Montrose, Roy Free ; W. L. Ogle, Guy's ; E. U. H. Pentreath, St. Bart.'s ; J. B. Phillips, Univ. Coll., Cardiff ; Jean Ross, Univ. Coll. ; D. J. Sheehan, St. Bart.'s ; B. McN. Truscott, Middlesex ; and C. E. G. Wickham, St. Thomas's.

Semon Lecture

This annual lecture will be delivered on Thursday, Oct. 31st, at 5 P.M., at the Royal Society of Medicine, 1, Wimpole-street. The lecturer, Sir StClair Thomson, has chosen as his subject : The Defences of the Upper Respiratory Tract.

Teddington Memorial Hospital

Lady Dawson of Penn recently opened this hospital, the foundation-stone of which was laid by Lord Dawson five years ago. The hospital began in a two-roomed villa some 60 years ago.

Royal College of Surgeons of England

At the primary examination for the fellowship held from May 28th to June 8th, 222 candidates presented themselves, of whom 84 were approved and 138 were rejected. The following are the names and medical schools of the successful candidates :—

D. A. Andersen, M.B. Lond., Middlesex and Univ. Coll ; A. G. Apley, Univ. Coll. ; D. W. Ashcroft, M.B. Otago, Middlesex and Univ. Coll. ; H. C. Barry, Sydney and Oxford ; A. D. Bateman, St. Bart.'s ; S. A. Beards, M.S. Lond. ; T. Beath, M.D. Toronto, Univ. Coll. ; J. P. Bentley, King's Coll. ; D. Bhatia, M.B. Punjab, Univ. Coll. ; R. D. Blachford, Guy's ; J. G. Bonnin, M.B. Melb., Middlesex and Univ. Coll. ; N. J. Bonnin, M.B. Adelaide, Middlesex and Univ. Coll. ; Janet E. Bottomley, Lond. School of Medicine for Women ; J. F. Bourdillon, Oxford and St. Bart.'s ; W. S. Campbell, M.B. Belf. ; W. M. Capper, M.B. Lond., St. Bart.'s ; S. R. Chandra, M.B. Calcutta, St. Bart.'s ; J. M. P. Clark, M.B. Leeds ; C. S. Day, M.D. Toronto, Manch. and Middlesex ; T. M. J. d'Offay, M.B. Edin., Edin. and Sheff. ; E. G. Dolton, Camb. and St. Thos. ; Margaret M. Ferguson, M.B. Manch. ; R. W. S. Fox, M.B. Melb., Middlesex ; E. H. W. Gifford, M.B. N.Z., Middlesex ; R. G. Gilbert, M.B. Lond., St. Bart.'s and Guy's ; M. Gordon, M.R.C.S., Univ. Coll. and Middlesex ; A. S. Gray, M.B. Otago, Univ. Coll. ; A. O. Green, M.D. Melb., Middlesex ; M. H Harmer, Camb. and St. Bart.'s ; R. F. E. Harrington, Middlesex and Univ. Coll. ; J. Henderson, M.B. Durh., Middlesex ; J. F. Heslop, M.B. Manch. ; M. J. Horgan, M.B. Dubl., St. Mary's ; R. A. Hughes, M.B. Liverp. ; L. A. Ives, St. Bart.'s ; J. I. P. James, Univ. Coll. ; C. C. Jeffery, M.R.C.S., London ; H. Kander, St. Mary's ; M. B. Khan, M.B. Leeds, Univ. Coll. and Middlesex ; D. Landsborough, London ; C. H. W. Lawes, M.B. Sydney, Middlesex ; A. G. Leigh, M.B. Liverp. ; J. C. Luke, M.D. McGill, Middlesex, St. Bart.'s, and Univ. Coll. ; K. Lumsden, M.R.C.S., St. Bart.'s and Middlesex ; A. N. McCrea, M.B. Camb., St. Mary's ; O. T. Mansfield, Middlesex ; R. W. Mason, Camb. and Middlesex ; S. K. Menon, M.B. Bombay, Univ. Coll. ; A. D. Messent, St. Bart.'s ; A. Miller, M.B. Camb., St. Mary's ; W. G. Mills, Birm. ; T. Moore, M.B. Durh. ; M. P. Morel, M.R.C.S., St. Bart.'s and St. Mary's ; J. Moroney, Liverp. ; D. V. Morse, St. Bart.'s ; A. Mukerji, M.B. Calcutta, Univ. Coll. ; J. H. Mulvany, M.R.C.P. Lond., King's Coll. ; C. J. B. Murray, M.R.C.S., Middlesex ; J. D. N. Nabarro, Univ. Coll. ; A. A. K. Naqsh-Bandi, Punjab and London ; D. P. O'Brien, M.B. N.Z., Otago ; H. Park, M.B. Edin., St. Mary's and Univ. Coll. ; R. A Piachaud, M.R.C.S., Univ. Coll. and Middlesex ; C. G. Rob, Camb. and St. Thos. ; A. G. Ross, M.B. Belf., St. Mary's and Middlesex ; R. H. Shah, M.R.C.S., Univ. Coll. ; C. J. C. Siggers, M.R.C.S., Guy's and Middlesex ; B. N. Sinha, M.R.C.S., Univ. Coll. ; A. F. Smith, Oxford, St. Mary's and London ; Margaret D. Snelling, London School of Medicine for Women ; H. Spencer, St. Mary's ; R. A. Stephen, M.D. Aberd. ; J. C. Stewart, M.B. Melb., Middlesex ; F. E. Stock, King's Coll. ; H. Treissman, M.B. Lond., M.R.C.S., St. Bart.'s ; O. J. Vaughan-Jackson, B.M. Oxon., London ; E. Vernon, M.B. Manch. ; Phyllis Wade, M.B. Lond., London School of Medicine for Women and Univ. Coll. ; N. J. Weinberg, M.B. Wits'rand, Lond. and Middlesex ; W. F. Whelton, M.B. Irel., Middlesex ; Aileen E. M. Whetnall, King's Coll. ; G. Williams, M.R.C.S., St. Mary's and St. Thos. ; R. A. M. Yeates, M.B. Sydney, Middlesex and Univ. Coll. ; F. R. Yousry, M.B. Cairo, Univ. Coll. and Middlesex.

London Hospital Medical College

On Thursday, July 11th, at 3 P.M., Mr. John Masefield, O.M., will distribute the prizes to the students of the London Hospital medical college and dental school.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on June 3rd Stanley Alstead (Glasgow), Richard Makram Ebeid (Egypt), and Walter Martin Nichols (Glasgow) were admitted to the fellowship.

Royal Society of Tropical Medicine and Hygiene

The annual general meeting of this society will be held on June 20th at Manson House (26, Portland-place, W.), at 8.51 P.M., when the new president, Sir Arthur Bagshawe, director of the Bureau of Hygiene and Tropical Diseases, will be inducted. The Manson medal will be presented to Dr. J. W. W. Stephens, F.R.S., emeritus professor of tropical medicine in the University of Liverpool, and the Chalmers medal to Dr. W. H. Taliaferro, professor of bacteriology in the Ogden School of Science, Chicago. Dr. S. Somasundram, physician to the Kandy Hospital, Ceylon, will afterwards give a demonstration of temperature charts showing the action of atebrin musonate in malaria. Sir John Megaw will open a discussion on typhus fever in the tropics, and other speakers will include Dr. William Fletcher and Mr. A. Felix, D.Sc.

Dr. Jules Gonin, whose death is reported, occupied the chair of ophthalmology at Lausanne and became famous as the inventor of the only successful treatment for detached retina.

Sir James Barrett, consulting surgeon to the Victorian Eye and Ear Hospital, and vice-chancellor of the University of Melbourne, has been appointed president-elect of the British Medical Association for 1935–36. Sir Richard Stawell, who was to have presided over the Association's Melbourne meeting in September, died on April 18th.

The tenth annual Macalister lecture will be delivered at the National Temperance Hospital on Thursday, June 20th, at 9 P.M., by Mr. Herbert J. Paterson, C.B.E., who will take for his subject "Medicine and Magic." Medical practitioners and their friends are invited to the lecture, at which light refreshment will be served, and communications should be addressed to the secretary, National Temperance Hospital, Hampstead-road, London, N.W.1.

International Association for Preventive Pædiatrics

The fifth conference of this association (the medical section of the Save the Children International Union) will be held at Basle, under the presidency of Prof. Wieland, on Sept. 20th and 21st. The subjects to be discussed are the avoidance of internal and external infection in children's hospitals, and the prevention of tuberculosis in schools. The secretary's address is 15, rue Lévrier, Geneva, Switzerland.

A Tour to Jugoslavia

La Nomade (a medical touring society) is organising a motor tour for medical men and their friends, in which the principal towns, spas, and watering-places of Jugoslavia will be visited. Basle will be the starting-point for the expedition on August 21st, and Jugoslavia will be reached by way of Zurich, Innsbruck, and Carinthia, the party arriving in Ljubljana on the 25th. The return journey will be through Trieste (Sept. 5th), the Italian lakes, and the St. Gothard pass, and the tour will end at Basle on Sept. 8th. The cost will be 2900 French francs, and further particulars may be had from Dr. Cavro, 15 rue Jules Ferry, Paris XIII.

British Association of Radiologists

This association, whose formation was described in our issue of May 4th (p. 1060), is holding its first annual meeting in Birmingham on July 12th and 13th under the presidency of Dr. J. F. Brailsford. After the presidential address a visit will be paid to the new hospital building, and in the afternoon an exhibition of radiograms of bones and joints will be held in the anatomical department of the University. The lord mayor of Birmingham will be the association's guest of honour at dinner in the evening. Next day will be devoted to communications and discussions on antenatal radiology (Dr. R. E. Roberts and Dr. L. A. Rowden), pre- and post-operative radiation for breast cancer (Dr. Douglas Webster), and spondylitis *adolescens* (Dr. Gilbert Scott). Proposal forms for membership and other information may be had from Dr. S. Cochrane Shanks (hon. secretary), 68, Harley-street, London, W.1.

Congresses in Russia

The date of the fifteenth International Physiological Congress, which is to take place in the U.S.S.R. under the presidency of Prof. Ivan Pavlov, has been definitely fixed for August 9th. From then until the 16th the sessions will be held in Leningrad; on the 17th and 18th the Congress will sit in Moscow. Five hundred delegates from other countries, including a hundred from Great Britain, have signified their intention to be present. The committee should be addressed at Leningrad, Main P.O., Box 13. It may also be noted that the Physiotherapeutic Congress will be held in Odessa from August 25th to 30th, particulars of which may be had from Dr. Shimshelevicz, B. Vorobinsky 7, Flat 5, Moscow 28. Information about travel arrangements and expenses for both congresses is obtainable from Intourist, Ltd., Bush House, London, W.C. 2.

Beit Memorial Trust

Prof. T. R. Elliott, F.R.S., director of the medical unit at University College Hospital, has been appointed a trustee of the Beit memorial fellowship for medical research in place of the late Sir John Rose Bradford.

Canterbury's New Hospital

The Duke of Kent will lay the foundation-stone of this hospital on July 12th. A sum of over £30,000 has still to be raised if the institution is to start clear of debt.

Lewes Victoria Hospital

The ordinary income for last year at this hospital was £3334 which was just sufficient to meet the expenditure. The penny fund has realised £984 during the year and in 11 years it has brought in well over £9000.

Donations and Bequests

Dr. Ernest Ofenheim, whose death we reported on March 9th, among other bequests to the St. John's Hospital, Lewisham, left £300 on trust to pay in perpetuity 1*d*. every Sunday morning to each patient in the hospital between the ages of 2 and 16.

Princess Beatrice Hospital, London

A campaign is to be inaugurated to raise £100,000 for this hospital, and £2000 has already been contributed by Mr. E. W. Meyerstein. The hospital is full to overflowing, and has no reserve beds for emergencies, while the accommodation for nurses is so unsuitable that the General Nursing Council cannot approve the hospital permanently as a training school.

Honour for a Medical Man

Dr. V. H. Wyatt Wingrave of Lyme Regis is to receive the freedom of Coventry, where he was born in 1858. Formerly pathologist to the Central London Throat and Ear Hospital, and dean of its medical college, Dr. Wingrave has for many years continued his pathological, literary, and archæological work in face of grave physical disability. He is the author (with the late Sir William Milligan) of "Diseases of the Ear" and of other medical works, and until lately has been hon. curator of the Lyme Regis museum which he founded some fifteen years ago. Because of the state of Dr. Wingrave's health the mayor of Coventry will travel to Lyme for the ceremony.

Royal Sanitary Institute

The annual health congress of this institute will be held at Bournemouth from July 15th to 20th under the presidency of Lord Malmesbury. Subjects for discussion include the new Housing Bill, rural water supplies, the future of the school medical service, open-air swimming baths, and town and country planning. Dr. Thomas Carnwath, deputy chief medical officer of the Ministry of Health will preside over the section of preventive medicine, and Dame Louise McIlroy, as president of the section of maternity, child welfare and school hygiene, will speak on diet deficiency in pregnancy. There will be a health exhibition in connexion with the congress. The secretary of the institute may be addressed at 90 Buckingham Palace-road, London, S.W.

Union Thérapeutique

The general assembly which will meet at the Paris Faculty of Medicine on Wednesday, Oct. 9th, will deal mainly with three topics: the male hormone introduced by Prof. G. Laroche, splanchnic surgery in arterial hypertension by Prof. René Fontaine (Strasbourg), antimonial compounds in therapy by Dr. J. La Barre (Brussels). The afternoon session, held jointly with the Société de Thérapeutique, will consider physiochemical and glandular equilibrium in the treatment of visceral spasms (Prof. Pende, Genoa); spasmogenic substances and their antagonists (Prof. Bürgi, Berne); sedative treatment of spasms (Dr. J. Decourt); and physiotherapy of spasms and visceral pains (Dr. Delherm). Inquiries should be addressed to the secretary-general, Dr. G. Leven, 24, rue Téhéran, Paris (8). The Union is an international association of doctors and biologists specially occupied with questions of treatment, the president being Prof. Maurice Loeper (Paris) and the British vice-president, Dr. E. P. Poulton.

Wembley Hospital

This hospital is planning a £95,000 extension scheme which will double the number of beds and provide new electrical, X ray, and other departments and a new nurses' home. The hospital has had to deal with over 10,000 road accidents cases during the last six years.

Bute Hospital, Luton

Miss Louisa Lye has left £24.000 and her Brighton residence to this hospital to establish a convalescent home to be known as the Thomas Lye Convalescent Home. She has bequeathed a further £2000 to endow a bed or beds in memory of her parents.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, June 18th.

General Meeting of Fellows. 5.30 P.M.

Psychiatry. 8.30 P.M. Prof. C. S. Myers, F.R.S., and Dr. A. Macrae: Vocational Guidance.

Thursday.

Dermatology. 5 P.M. (Cases at 4 P.M.) Dr. H. W. Barber: 1. Lichen Spinulosus with Cicatricial Alopecia.

Friday.

Obstetri [illegible] Miss E. H. Lepper: The [illegible] umours of the Ovary. Mr. [illegible] Cast in Suspected Ectopic Gestation. Dr. Chassar Moir: The Merits and Demerits of Oxytocic Drugs in the Post-partum Period.

EUGENICS SOCIETY.

Tuesday, June 18th.—5.15 P.M. (Rooms of the Linnean Society, Burlington House. Piccadilly. W.). Dr. T. Drummond Shiels, Mr. C. V. Drysdale, D.Sc.: Are the Principles of Eugenics most favoured by a Socialist or Capitalist State of Society?

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE. 26, Portland-place, W.

Thursday, June 20th.—8.15 P.M., Annual General Meeting. Dr. S. Somasundram: Demonstration of Temperature Charts illustrating the Action of Atebrin Musonate in Malaria. Sir John Megaw. Dr. W. Fletcher. and Mr. A. Felix, D.Sc.: Typhus Fever in the Tropics.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, June 17th. to Saturday. June 22nd.—St. Peter's Hospital. Henrietta-street. W.C. All-day course in urology.—Prince of Wales's Hospital. N. All-day course in medicine, surgery, and the specialities.—London Lock Hospital, Dean-street. W. Afternoon course in venereal diseases.—Courses and clinics arranged by the fellowship are open only to members and associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

Thursday. June 20th.—2 P.M.. Dr. Donald Paterson: Artificial Feeding of Infants. 3 P.M., Dr. Signy: Pathological Demonstration.

Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

NATIONAL TEMPERANCE HOSPITAL. Hampstead-road, N.W.

Thursday, June 20th.—9 P.M.. Mr. Herbert Paterson: Medicine and Magic. (Macalister lecture.)

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.

Thursday, June 20th.—5 P.M.. Mr. Joseph Needham, Sc.D.: Problems of Chemical Embryology.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

Wednesday, June 19th.—3 P.M., Visit to High Wood Hospital for Children. Brentwood. (Dr. A. G. L. Reade.)

INSTITUTE OF MEDICAL PSYCHOLOGY. Malet-place. W.C.

Wednesday, June 19th.—3 P.M.. Dr. H. Crichton-Miller: Impotence. 4.30 P.M., Dr. Cedric Shaw: Differential Diagnosis.

INSTITUTE OF CHILD PSYCHOLOGY.

Wednesday, June 19th.—6.15 P.M. (Friends House. Euston-road, N.W.). Miss M. Kirschner: Physical Culture and Self-realisation. 8.15 P.M., Dr. Margaret Lowenfeld: Child's Play and Man's Work.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.

Sunday, June 16th.—10.30 A.M. (Newcastle General Hospital), Dr. G. F. Duggan: Surgical Cases.

UNIVERSITY OF BIRMINGHAM.

Tuesday, June 18th.—3.30 P.M. (General Hospital), Mr. Scott Mason: Diagnosis and Treatment of Carcinoma of the Colon.

Thursday.—4 P.M. (Medical Lecture Theatre, University). Prof. K. Douglas Wilkinson: Acute Rheumatism and its Results. (Last Ingleby lecture.)

Friday.—3.30 P.M. (Queen's Hospital), Mr. D. J. Evans: Diseases of the Nasal Sinuses.

Appointments

ALLIN, E. S., M.D., has been appointed Senior Resident Officer to the Royal Gwart Hospital, Newport, Mon.

BEATON, NEIL, M.B. Glasg., F.R.C.S. Edin., Resident Surgical Officer at the King George Hospital, Ilford.

BEATTIE, JOHN, M.D. Camb., F.R.C.S. Eng., M.C.O.G., Assistant Physician-Accoucheur to St. Bartholomew's Hospital.

BEHRMAN, SIMON, B.Sc., M.R.C.P. Lond.. Registrar to the National Hospital for Diseases of the Nervous System.

BIRD, J. D. H.. M.B. Lond., F.R.C.S. Eng., Resident Assistant Surgical Officer and Casualty Officer at the King George Hospital, Ilford.

FOY, J. W. H., M.R.C.S. Eng.. D.M.R.E., Senior Assistant Medical Officer to the Radiological Department of the Manchester Royal Infirmary.

GOVER, W., B.M. Oxon., Honorary Physician to the Royal East Sussex Hospital.

KREMER, MICHAEL, M.D., M.R.C.P. Lond., Assistant Registrar to the National Hospital for Diseases of the Nervous System.

LANGLEY, G. F.. M.B. Brist., F.R.C.S. Eng., Senior Resident Medical Officer at the Bristol General Hospital.

LAUNER, N., M.B. Manch., Medical Registrar to Ancoats Hospital, Manchester.

MILLAR, A. U., M.B. Camb., D.M.R.E., Junior Assistant Medical Officer to the Radiological Department of the Manchester Royal Infirmary.

SMITH, H. E., M.B. Aberd., Hon. Ophthalmic Surgeon to the Royal Aberdeen Hospital for Sick Children.

STERN, DAVID, M.B. Edin., Resident Medical Officer at the Royal Infirmary, Sunderland.

TAYLOR. E. FOLEY, M.B. Dubl.. D.M.R.E. Camb.. Assistant Radium Officer to the Cancer Hospital (Free), London.

THOMSON. W. A. R., M.D., Paterson Research Scholar and Chief Assistant in the Cardiac Department of the London Hospital.

UNSWORTH, S. V., M.B. Liverp., F.R.C.S. Eng., Visiting Surgeon for the Mill-road Infirmary, Liverpool.

Queen Charlotte's Maternity Hospital, London.—The following appointments are announced:—

HARRIS, B. P.. M.B. Camb., Senior Resident Medical Officer:
MACKENZIE, K. F., M.B. Dub., F.R.C.S. Irel., Assistant Resident Medical Officer:
ROGERS, KATHARINE C., M.R.C.S. Eng.. Resident Anæsthetist and District Resident Medical Officer: and
CANN. A. M. R., M.B. Lond., Resident Anæsthetist.

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced. A.M.O.(I.) and (II.)=Assistant Medical Officer, Grades I. and II.

THOMPSON, C. G. K., M.B. Edin.. A.M.O. (I.). Brook;
MCGRATH, W. S., M.B. Sydney, F.R.C.S. Eng., A.M.O. (I.), St. Giles';
MARR, J. A. S.. M.B. Cape Town, F.R.C.S. Eng., A.M.O. (I.). St. Nicholas';
HOARE, C. M., M.B. Lond., A.M.O. (I.), Fulham;
STONE, D.. M.R.C.S. Eng., A.M.O. (I.). Lambeth;
MACRAE, D. J., M.D., F.R.C.S. Edin., A.M.O. (I.), St. George-in-the-East;
FRAZER. T. A., M.D. Aberd., A.M.O. (II.). Archway;
SMITH, S., M.B. N.Z., A.M.O. (II.). Bethnal Green;
ROSS, A. G.. M.B. Belf., A.M.O. (II.), St. Andrew's;
DENNISON, F. R., M.D. Lond., D.P.H., A.M.O. (II.), Colindale;
FURST. H. C., B.Sc., L.R.C.P. Edin., A.M.O. (II.). Lambeth;
ARTHUR. J. B., M.B. Edin., A.M.O. (II.), Dulwich:
GREENFIELD. L., M.B., A.M.O. (II.). St. Luke's (Chelsea):
SHERRIFF, G. G., M.B. Edin., A.M.O. (II.). St. Stephen's:
BRADBURY, E., B.Chir. Camb., A.M.O. (II.), St. Mary, Islington;
FITZGERALD, W. E., M.B. Melb., A.M.O. (II.), St. Mary, Islington;
BANKS. M. H., M.R.C.S. Eng., A.M.O. (II.), St. Andrew's;
WHEATON, C. E. W., M.D., M.R.C.P. Lond., Senior A.M.O. (II.) St. Andrew's:
CROWE, E. V.. M.B., F.R.C.S. Edin., Senior A.M.O. (II.). St. James's;
KAINES, G. E., M.B. Melb., Senior A.M.O. (II.), Dulwich:
JENNINGS, C. M., F.R.C.S. Edin., Senior A.M.O. (II.). St. Stephen's:
CARDNO, J. A., M.B. Aberd., A.M.O. (I.). Bethnal Green:
ANGLIN, A. F. W., M.D. Toronto, A.M.O. (I.). Colindale:
ROBINSON, M. H. B., M.B. Melb., A.M.O. (I.). St. Charles'; and
NICHOL, R. W., M.R.C.S. Eng., A.M.O. (I.), St. Giles' Hospital.

Vacancies

For further information refer to the advertisement columns

Aberdeen P[illegible] Res. M.O.

Aylesbury, [illegible] *Hospital.*—Sen. Res. M.O. £200. [illegible] £150.

Barnsley County Borough.—Asst. M.O.H., &c. £500.

Barry U.D.C. Surgical Hospital.—H.S. At rate of £200.

Beckenham, Bethlem Hospital, Monks Orchard.—Res. H.P. At rate of £150.

Belfast Royal Maternity Hospital.—Res. H.S. for Rea Block (Isolation). Also Res. M.O. At rate of £50 and £26 respectively.

Birmingham, Maryhull Colony Certified Institution.—Jun. Asst. M.O. £350.

Birmingham, Salterly Grange Sanatorium, near Cheltenham.—Med. Supt. £750.

Birmingham University, Dept. of Industrial Hygiene and Medicine. Research Worker and Lecturer. £600.

Birmingham University, Faculty of Medicine.—Lecturer in Bacteriology and Asst. Bacteriologist in Public Health Laboratory. £400.
Blackburn Royal Infirmary.—Res. Surg. O. £250. H.S. £175. Also Cas. O. £150.
Bolton Royal Infirmary.—Two H.S.'s. Each £125. Also Hon. Physician for Diseases of the Skin. £100.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. £120.
Bristol General Hospital.—Two H.P.'s, two H.S.'s, Res. Obstet. O. H.S. to Spec. Depts. Also Cas. H.S. Each at rate of £80.
Burnley, Municipal General Hospital.—Jun. Res. M.O. £150.
Buxton, Devonshire Royal Hospital.—H.P. Also Asst. H.P. At rate of £200 and £150 respectively.
Carshalton, Surrey, Queen Mary's Hospital for Children.—Asst. M.O. £350.
Chester Royal Infirmary.—H.S. At rate of £150.
Chesterfield and North Derbyshire Royal Hospital.—H.S. to Ear, Nose, and Throat and Eye Depts. At rate of £150.
Children's Hospital, Hampstead, N.W.—Asst. Ear, Nose and Throat Surgeon.
Derbyshire Hospital for Sick Children.—Res. H.S. At rate of £130.
Doncaster Royal Infirmary.—H.S. to Eye and Ear, Nose, and Throat Depts., Cas. H.S. Also H.S. Each £175.
Eastbourne. St. Mary's Municipal Hospital.—Res. H.S. £150.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Res. Obstet. Asst. At rate of £50.
Fulham Borough Council.—M.O.H. £1100.
Golden Square Throat, Nose, and Ear Hospital, W.—Hon. [illegible]
[illegible] *Hospital.*—H.S. £150.
[illegible] rth H.S. At rate of £150.
[illegible] *Association, 10, Mall-road, W.*—
Anæsthetist.
Hampstead General and North West London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.
Harrogate Royal Bath Hospital.—Res. M.O. £156.
Hastings, Royal East Sussex Hospital.—Jun. H.S. At rate of £150. Also Hon. Asst. Physician.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100. Also Asst. Physician.
King Edward VII Sanatorium, Midhurst.—First Asst. M.O. £500.
King's College Hospital.—Radium Registrar.
Leyton Borough.—Temp. Asst. M.O. 10 guineas per week.
Liverpool, David Lewis Northern Hospital.—Cas. O. £120. Also H.S. and H.P. Each £80.
Liverpool, Royal Infirmary.—Medical Tutor and Registrar. £140.
London Hospital, E.—First Asst. to Gynæcological and Obstetric Dept. £250.
London University.—External Examinerships. Chair of Dental Prosthetics at Guy's Hospital Med. School. £1000. Also University Readership in Anatomy. £550.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester Ancoats Hospital.—H.S. At rate of £100.
Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S. At rate of £150.
Manchester Royal Infirmary.—Res Clin. Pathologist. £100.
Manchester Victoria Memorial Jewish Hospital, Cheetham.—Clin. Pathologist. At rate of £250.
Manor House Hospital, Golders Green, N.W.—Jun. M.O. £200.
Milnathort, Kinross-shire, Ochil Hills Sanatorium.—Asst. M.O. £250.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Morning List Anæsthetist. At rate of £250. Also Anæsthetists, 12s. 10*d*. each afternoon.
Newport, Isle of Wight County Mental Hospital.——H.P. At rate of 150 guineas.
New Zealand, General Hospital, Auckland.—Sen. Surg. O. Also Sen. Med. O. Each £650.
Preston, Sharoe Green Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £200 and £100 respectively.
Preston and County of Lancaster Queen Victoria Royal Infirmary. Special H.S. At rate of £150.
Princess Elizabeth of York Hospital for Children, Shadwell, E.—H.P. and H.S. Each at rate of £125.
Princess Louise, Kensington Hospital for Children, St. Quintin-avenue, W.—H.S. At rate of £100.
Putney Hospital, Lower Common, S.W.—Jun. M.O. At rate of £100.
Reading, Royal Berkshire Hospital.—H.S. Also Cas. O. Each at rate of £125.
Royal Northern Hospital, Holloway, N.—H.P. and H.S. Each at rate of £70.
St. Giles Hospital, Brunswick-square, S.E.—Asst. M.O. £350.
St. Mary Abbots Hospital, Marloes-road, Kensington, W.—H.P. At rate of £120.
St. Pancras Hospital, N.W.—Asst. M.O. £250.
St. Thomas's Hospital Medical School.—Demonstrator in Physiology. £400.
Sheffield Roya [illegible] H.S.'s. One H.P. Aural H.S.
Ophth. H [illegible] at rate of £80. Also Clin.
Asst. to [illegible] 300.
Shrewsbury, I [illegible] —Two Res. H.S.'s. Each
at rate of £160.
[illegible] *neral Hospital.*—Jun. Res. M.O. £200.
[illegible] *Borough.*—Med. Supt. for Council's
[illegible] Hospitals. £750.
[illegible] *Hospital.*—H.S. to Orthopædic and
South London Hospital for Women, Clapham Common, S.W.—H.S. At rate of £100.
Stafford, Staffordshire General Infirmary.—H.P. and Cas. O. At rate of £150.
Stirling District Mental Hospital, Larbert.—Jun. Assist. M.O. £300.
Sunderland Children's Hospital.—H.S. £120.
Sutton and Cheam Hospital.—Asst. Res. M.O. At rate of £100.
Swansea Cefn Coed Hospital.—Asst. M.O. £350.
Swansea General and Eye Hospital.—H.S. At rate of £150.
Weston-super-Mare General Hospital.—Res. H.P. £150.
Wigan, Royal Albert Edward Infirmary and Dispensary.—Res. Med. and Surg. O. and Reg. £250. Also H.S. At rate of £150.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Clin. Assts. for Out-Patient Dept.
Windsor, King Edward VII Hospital.—Three H.S.'s. Each at rate of £100.
Wolverhampton, Royal Hospital.—Res. H.S.'s to Special Depts. Also Asst. Res. M.O. Each at rate of £100. Also H.P. At rate of £125.
Worcester Royal Infirmary.—H.P. Also Jun. H.S. £160 and £120 respectively.
York City.—Asst. M.O.H. At rate of £350.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Hatfield, Hertfordshire.

Births, Marriages, and Deaths

BIRTHS

Donovan.—On June 7th, at a nursing home, Birmingham, the wife of Hugh Donovan, F.R.C.S. Eng., of a daughter.
Fish.—On May 29th, at Brentwood, the wife of R. Huxley Fish, M.B. Camb., M.R.C.P. Lond., of a son (Daniel).
Havard.—On June 9th, the wife of R. Emlyn Havard, D.M. Oxon., Oxford, of a son.
Lloyd.—On June 2nd, at Towyn, Merionethshire, the wife of J. H. Marshall Lloyd, M.B. Lond., of a son.
Mills.—On June 4th, the wife of J. Denholm Mills, B.M. Oxon., of Seaford, of a son.
Morgan.—On June 2nd, at Ashfield, Crickhowell, Breconshire, the wife of J. L. Morgan, B.Chir. Camb., of a daughter.
Turner.—On June 7th, at Devonshire-place, the wife of Ronald Turner, M.R.C.S. Eng., of a son.

MARRIAGES

Buxton—Bragg.—On June 1st, at St. Paul's Church, Portman-square, Kenneth Leonard Buxton, F.R.C.S. Eng., of North Mimms, Herts., to Agnes Josephine Bragg, daughter of the Rev. Dr. and Mrs. T. Bragg, of Christ Church, Lowestoft.
Craig—Garrett.—On June 1st, at St. Margaret's Church, Leiston, Daniel Mackinnon Craig, M.R.C.S. Eng., of Framlingham, Suffolk, to Phyllis Clifton, youngest daughter of Lieut.-Colonel and Mrs. F. Garrett, of Leiston, Suffolk.
[illegible] June 1st, at Holy Trinity Church,
[illegible] William S. Paterson, M.D. Glasg., of
[illegible] daughter of the late Mr. Christopher
[illegible] shbourne.
Reah—Roberts.—On June 5th, 1935, at St. Mary's Church, Conway, North Wales, Thomas Glen Reah, M.D., M.R.C.P., elder son of Mr. and Mrs. J. Carter Reah, of Stockton-on-Tees, to Ruth M. Roberts, youngest daughter of the late D. and Mrs. Roberts, of Conway, North Wales.
Rice—Slater.—On June 6th, at St. Michael's Church, Blackheath, Hugh D. C. Rice, M.R.C.S. Eng., to Kathleen Mary, third daughter of Mr. and Mrs. Harold Slater, of "Colynton," Orpington, Kent.
Stern—Gildard.—On June 4th, at St. Columba's, Pont-street, David Michael Stern, F.R.C.S. Eng., of Dollis Hill-lane, N.W., to Eileen Freya Macleod, second daughter of the late Mr. J. Graham Gildard, of Glasgow, and Mrs. Gildard, of Frognal, N.W.
Walker—Cassie.—On June 8, at St. Peter's Church, Bayswater, C. G. Walker, M.D. Aberd., Oxted, Surrey, to Barbara Bathea Cassie, Stanley-gardens, London.

DEATHS

Biggs.—On June 3rd, at Barnstaple, John Maundy Biggs, L.R.C.P. Lond., L.S.A., in his eightieth year.
Braithwaite.—On June 7th, at Brackley, the result of a motor accident, Norman Braithwaite, M.B. Durh., aged 41.
Goldie.—On June 4th, at Upper Wimpole-street, W., George James Goldie, L.D.S., L.R.C.P. Edin., formerly of Merrion-square West, Dublin.
Hickey.—On June 4th, at Plymouth, Major A. J. Hickey, M.C., M.R.C.S. Eng., R.A.M.C., of Kilkee, County Clare, I.F.S.
Home.—On June 9th, at Yew Tree-road, Southborough, Kent, William Edward Home, O.B.E., B.Sc., M.D. Edin., Fleet Surgeon, R.N., Retired, in his seventy-fifth year.
Morton.—On June 6th, at the Governor's House, Holloway Prison, N., John Hall Morton, M.D., T.C.D.
Roberts.—On June 9th, Charles Roberts, F.R.C.S. Eng., of Didsbury and Manchester, age 60.
Stokes.—On June 5th, John Stokes, M.A., M.D. Durh., of Sheffield, in his seventieth year.
Stuart-Low.—On June 5th, at The Homestead, Northwood, William Stuart-Low, F.R.C.S. Eng., of Wimpole-street, aged 77.
Swindale.—On June 9th, at Glebe-place, Chelsea, suddenly, Henry Vernon Swindale, M.R.C.S. Eng.
Tait.—On June 7th, at Handcross, Sussex, Henry Brewer Tait, F.R.C.S. Eng.
Wilson.—On June 3rd, at The Vicarage, Muker, Yorkshire, Horace Bagster Wilson, O.B.E., M.R.C.S. Eng., Vicar of Muker, aged 72 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

RADIOLOGY OF TUBERCULOSIS

At a meeting of the North Western Tuberculosis Society held in Liverpool on May 30th, Dr. J. V. Sparks (London) read a paper on radiology in the diagnosis and treatment of pulmonary tuberculosis. In his opinion a case that was difficult radiologically was also usually difficult clinically and pathologically. Errors of interpretation in X ray films were due to films being poor in quality or too few in number and to undue bias, caused by a knowledge of the clinical data. It was necessary to obtain a correct amount of detail and correct density of films. Accurate control over the various factors of exposure was important to produce a correct and comparative density. A high milliamperage and low kilovoltage were desirable and a minimum time of exposure. As low as 1/100th sec. was practicable with modern apparatus. The focus of the X ray tube should not be too broad—a 6 kw. tube was big enough. At the Brompton Hospital a condenser apparatus had lately been installed, giving exposures of 1/30th second, variations in kilovoltage after measurement of patients alone being necessary. With this apparatus stereoscopy was not possible. Dr. Sparks then referred to the position of the patient and pointed out the various disadvantages of the upright, prone, and supine positions. He preferred to have patients seated rather than standing, and spoke well of the prone position. In any case, it was important to get the scapulæ out of the way. Variations in kilovoltage were important factors, and conspicuous changes in the appearance of films followed differences as low as 2 kv. The radiological diagnosis of tuberculosis depended on a recognition of tubercle formation, not on mottling or cavities.

X ray films, said Dr. Sparks in conclusion, should be interpreted as reports at autopsies were made—that is to say, uninfluenced by clinical observations. Personally, he did not advocate screening as a routine diagnostic procedure and found little help from stereoscopy.

FOOD SUPPLIES

In the course of a Chadwick lecture delivered in London on June 6th, Sir John Russell, F.R.S., director of the Rothamsted Experimental Station, pointed out that human beings require a complex diet, including not simply the classical body-forming substances, the mineral substances, and the more recently discovered vitamins, but possibly also other substances. In the absence of full and precise chemical knowledge of foods and food requirements there was safety in a varied diet drawn from a variety of sources. By various devices the British farmers' share in the home market was now being pegged. At present this country produced about 15 per cent. of its wheat supply and about 40 per cent. of its other foods: the line could by suitable pegging be drawn elsewhere. In two directions further information was urgently needed. What were the relative advantages of fresh and of preserved or chilled foods as articles of diet? And on what principles in a world of manipulated markets should Great Britain select the sources from which to draw her foods?

SOME APPLICATIONS OF CHEMISTRY

The Chemistry Research Board, which in 1927 succeeded the Chemistry Coördinating Research Board and took over its research laboratory at Teddington, has issued its first report to the Committee of the Privy Council for Scientific and Industrial Research (H.M. Stationery Office. 1*s.* 6*d.*). The 94 pages are mostly taken up by a summary of the work of the laboratory from its beginning, written by the director, Prof. G. T. Morgan, who in March retired from the presidency of the Chemical Society. Most of the matter is of general rather than medical interest. Some of it, such as the work on base-exchange methods of water-softening and a summary of present knowledge of the causes of plumbo-solvency of drinking waters, has been referred to in our columns. A special feature of the equipment of the laboratory at Teddington is the very fine apparatus constructed and used there for studying reactions (mostly with catalysts) at high pressures including one autoclave still in the experimental stages for 3000 atmospheres at 200° C. and several for 200 atmospheres at 300–400° C. Many interesting syntheses, e.g., of methyl and ethyl alcohols from hydrogen and carbon monoxide, and acetic acid from methyl alcohol and carbon monoxide, have been effected in this way. Of more direct medical interest is the work on chemotherapy. Two new series of quinquivalent arsenical compounds have yielded promising results as trypanocides and 500 grammes of succinamido-methyl-amide-p-arsenic acid has been sent for clinical trial at the Liverpool School of Tropical Medicine and in Nigeria. Various other compounds have been tested against trypanosomiasis and malaria and for antiseptic properties by Profs. Warrington Yorke, D. Keilin and C. H. Browning respectively. The most promising results have been obtained in antisepsis: quaternary salts from *o*-, *m*- and *p*-aminophenyl-phenanthridines are moderately powerful antiseptics in peptone-water and in serum, whilst similar salts from 3-amino-9-methyl-phenanthridine are powerful antiseptics in serum especially against *B. coli* but are impotent in peptone-water. Other derivatives of this group have yielded promising results and attempts to synthesise new types continue. Search has been made for a non-metallic substance to replace vulcanite for denture purposes and for an adhesive material to be used as a dental lute and cement.

WOUNDS OF THE HEART

An unusual case of foreign body in the heart was quoted in our issue of March 30th (p. 745), and it may be of interest to describe two other cases of cardiac wounding lately reported from Rumania by J. Jiano (Rev. de Chir. de Bucarest, 1935, xxxvii., 567).

The first patient received a shell wound during the late war, and was operated on as an emergency three-quarters of an hour later. On admission to hospital the pulse was fairly good, and the area of cardiac dullness normal; there was a lacerated wound in the precordial area with comminution of the upper part of the sternum and corresponding ribs. The skin wound was excised, loose pieces of bone and metal being removed, and parts of the sternum and of several ribs were resected to expose the pericardial sac, which showed a wound in its upper part. This wound was enlarged, and several clots removed from the cavity of the sac. A small fragment of metal was then seen embedded in the wall of the right auricle. As it was impossible to determine whether or no it had penetrated the wall, a purse-string suture of linen thread was introduced around it, and drawn tight as the fragment was extracted. The *projectile* was wedge-shaped and about 5 mm. long. The pericardium was closed without drainage, and the outer wound was treated by the Carrel-Dakin method. The patient died five days later however from mediastinitis.

The second case was that of a youth 19 years old, who was admitted to hospital with a stab-wound in the precordium. He was unconscious on admission but quickly recovered, and as no abnormal signs could be detected it was concluded that the wound was superficial and he was discharged four days later. A fortnight afterwards, however, he began to have pain in the precordial and epigastric regions, increased by coughing and by taking food, but somewhat relieved by vomiting. He was readmitted to hospital as a case of pericarditis, with engorgement of the veins of the neck, greatly enlarged area of cardiac dullness, distant heart sounds, a precordial rub, a pulse-rate of 90, and generalised bronchitis. At operation, preliminary puncture of the pericardial sac yielded altered blood, and on turning back a flap of the chest wall, the sac was found to be enormously distended and to contain more than a litre of black, altered blood. The heart was almost completely covered with organised clot, and on removing this a wound 5 mm. long, which immediately began to bleed, came into view on the anterior wall of the right ventricle, close to the apex. The heart was grasped in the left hand and the wound closed in three layers with interrupted sutures of catgut. The pericardial sac was cleansed, and closed with drainage. The flap was sutured back into position. The patient died six days later from broncho-pneumonia, and at post-mortem it was found that the wound in the heart was healed.

Jiano points out that in early cases there may be little or nothing in the physical signs to indicate a wound of the heart. He emphasises the importance of keeping all cases of precordial trauma under observation, and of early resort to operation if a wound is suspected.

THE RED CROSS EMBLEM

BY the laws and usages of war the Red Cross flag is hoisted over medical establishments, but it must not be used to cover the transport of ammunition or non-medical stores; rifles must not be fired from a Red Cross tent and hospitals must not be used as observation points. The Geneva Convention of 1906 *for ameliorating the condition of the wounded and* sick of armies in the field was ratified by Britain with a reservation for Articles 23 and 27 which forbade the the use of the Red Cross emblem except to indicate a military medical service. In 1911 Parliament passed an Act to give effect to the Convention; it prohibited the use of the Red Cross emblem or of the words "Red Cross" in a trade or business or for any other purpose without the authority of the Army Council. Our reservation as to Articles 23 and 27 was withdrawn on July 7th 1914. Questions of the abuse of the Red Cross in war-time by combatant countries have been debated by international lawyers of high repute; there was, for instance, a controversial incident in the battle of Mukden in 1905 over which academic opinion has been divided. A more pacific instance has now to be recorded. A hundred years ago a hostelry at North Cray in Kent was named the Red Cross Tavern. Twenty-four years after the passing of the 1911 Act, the vigilance of the War Office has detected this as an infringment of the Geneva Convention. At the recent licensing sessions at Bromley the justices were asked to sanction the change of the name of these licensed premises from the Red Cross to the White Cross Tavern. The bench asked cautiously if the new title involved any latent contravention of the law. The applicant said he hoped it did not, but he could not guarantee what the next 24 years might bring forth.

AN ITALIAN REVIEW OF PREVENTIVE MEDICINE

IN terse and picturesque language a little Italian manual[1] covers the whole field of preventive medicine, explaining in the simplest manner, but with accuracy, the rationale of public health measures, as well as that of the old-fashioned rules of bodily health. It appears that even under the paternal government of Mussolini cooks still prepare salads with unwashed hands; tuberculous nursemaids kiss the baby; the bath in municipal houses is used for clothes, not bodies; the sun is shut out from the children in order to spare the carpets; and the author of a manual on preventive medicine finds it necessary to plead: "Why not buy a cheap vacuum-cleaner instead of a cheap radio—it is so much less disturbing to the neighbours!" It appears also that, though the six-year-olds of the Roman Campagna can recite: "Malaria is a parasitic disease, caused by a protozoa in the blood and transmitted by a mosquito, the anopheles," yet their parents still leave stagnant water behind their houses for these same mosquitoes to breed in. Dr. Pampana begins with the need for physical cleanliness, including the daily bath (h. and c.), not forgetting the perils of the bathroom, "the most dangerous room in the house" from such causes as the cold bath immediately after a meal, the enervating effect of the overheated bath, the poisonous fumes of geysers, and the slippery floor. He passes on to the preparation of foods, to the principles of inoculation against infectious diseases, the early diagnosis of cancer and of those hidden septic foci which are said to be responsible for "rheumatic" diseases. To attain these latter goals he advises annual overhaul by a doctor, in favour of which he quotes certain insurance statistics; but he does not omit a warning against introspection and fear, reminding us that the emotions induced by a study of our own pulses can be factors in keeping up a blood pressure we desire to reduce. There is an admirable chapter on sex and the prophylaxis of venereal diseases. Idleness and overwork are both classed as undesirable luxuries to be avoided, and the author stresses the value of the Britisher's "hobbies." Referring to the campaign against tuberculosis, he recommends the Italian system of insurance against this disease, which promises in a few years to render possible the treatment of every case under ideal conditions. He considers the isolation of contagious cases from the healthy members of their families an essential measure, and supplies the interesting table of precautions against the spread of tuberculosis, which has been issued to the Italian public. Dr. Pampana's precepts are fundamentally those of common sense.

SWIMMING-BATH DEVELOPMENT

LAST month the National Association of Bath Superintendents held its annual conference at Hastings where for many years there has been a large system of swimming and other baths on the sea front, recently remodelled on sound lines, besides a large open-air bath on the shore at St. Leonards. A paper read at the conference by Messrs. E. Copeland Snelgrove, H. C. Husband and A. H. Clark struck a bold line worthy of consideration. It is of no use, they suggest, connecting the idea of swimming baths with that of town and country planning unless and until a status is achieved by a minimum of hygienic safety and attractive conditions introduced by statute into swimming bath practice and location. The present indifference to bathing is due, they think, to their unpleasant atmosphere (unless of open-air type) to their inadequate sanitary accommodation and memories of still worse things, to the dangerous state of the surface water, and to their generally unhappy situations in sordid areas or adjacent to public houses. There is without question a strong case for making swimming baths attractive places of public resort and safeguarding bathers by regulations dealing with preliminary ablution, including perhaps a sterilising shower to render costumes innocuous, with the purity of the water and with proper dressing accommodation. Then, as the authors would like, baths might be provided on a pro-rata basis for population. The locality should be well chosen and licensed premises, if desired, included in the bath compound. This will cost money but at the present rate of increase of popularity the bath may become as profitable as the cinema. Some, however, will still prefer the quiet river or the less frequented parts of the sea shore.

LOUSY BUT LOYAL

ACROSS a small street in one of London's humbler quarters, gaily decorated with bunting, paper wreaths, and natural flowers to demonstrate the jubilee sentiments of the dwellers, there floated a large label bearing the above inscription. The story is vouched for by a medical eye-witness, and the humorous pathos of the label deserves this little publicity.

In reply to queries we give the following address: The Lord Kitchener Memorial Fund, 34, Norfolk-street, London, W.C.2. Information concerning the Kitchener scholarships will be found in THE LANCET of May 25th, p. 1229.

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[1] Vita Piu Sana e Piu Lunga. Libro d'igiene dedicato alle persone colte. By Emilio J. Pampana. Roma: Annali d'Igiene. Pp. 114. Lir. 12.

ADDRESSES AND ORIGINAL ARTICLES

UNDULANT FEVER IN SCOTLAND

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SINCE the first case of undulant fever due to *Brucella abortus* in Scotland was reported in 1930,[1] a sufficient number of cases have been recorded for an attempt to be made to assess the epidemiological and clinical features of the disease.

We have collected for the Scottish Committee on Bovine Contagious Abortion, partly privately and partly through the Scottish Department of Health, records of 97 cases of undulant fever. This information was obtained by means of questionnaires sent to the doctor in charge of each case. We propose to analyse these records, but before doing so, we wish to review briefly the modes by which infection may be acquired, and to consider how they apply to Scotland.

Infection may be acquired through handling animals or meat products infected with brucella. In this mode of infection the organism is presumed to pass through abrasions in the skin. Hardy and his colleagues[2] have demonstrated in guinea-pigs, and Otero[3] in human volunteers, that it can readily do so.

Brucella infection is common among the livestock of this country. Priestley[4] states that in England no less than 20 per cent. of cattle and 5–15 per cent. of horses are infected. He found no evidence of infection among sheep or swine. Our own experience leads us to believe that the proportion of infected cattle in Scotland is equally great. It is not then surprising to find that the number of cases of undulant fever occurring among persons whose occupation involves the handling of animals or meat is out of proportion to their numerical representation in the population. Thus in our series of 97 cases, 14 were of this class. Ten were farm workers, 2 were butchers, 1 was a milkmaid, and 1 a blacksmith who gave a history of having shod a horse with a disease of its legs shortly before the onset of his illness. Unfortunately no bacteriological investigation was carried out on the horse.

Another particular case among our series was of a bacteriologist. He had worked with cultures of brucella, although not for some considerable time previous to the onset of his illness. But it is possible that his was a laboratory infection.

In Scotland, however, the majority of the population have no direct contact with animals. In their case infection is probably acquired through drinking infected milk, or, less likely, by eating infected butter or cheese. We have previously shown that in Edinburgh 19·8 per cent. of raw milk from single sources contained *Br. abortus*, while in the ordinary mixed retailed milk coming from several sources, the percentage was 34·9.[5] In Aberdeen 28·3 per cent. of raw milk contained *Br. abortus*.[6] Our experience agreed with that of other workers that pasteurisation by the holder method effectively kills the organism. There is thus ample opportunity for contracting infection with *Br. abortus* through the consumption of raw milk. Infection through eating butter or cheese is not probable. For the most part these foods are made with pasteurised milk and one of us, (J. S.)[7] failed to culture *Br. abortus* from 79 samples of butter, 39 samples of margarine, and 26 samples of cheese.

An inquiry into the amount of milk drunk by the patients in our series of cases showed that 18 drank one pint or more a day, 8 drank cream, 21 drank under one pint, while 15 took milk only in tea or coffee, or on puddings or porridge. One inexplicable case was of a patient who had no contact with animals and took milk only in tea or in puddings; then she used pasteurised milk.

We consider that the proportion of undulant fever patients who drink one pint or more of milk a day is much greater than the proportion of the whole population who drink this amount. Nor is it likely that one in twelve of the population drink cream. In an infected milk *Br. abortus* is found in greatest numbers in the cream. The 15 patients who took very little milk represent more fairly the average population.

Among the heavy milk drinkers were eight who used a milk diet for medical reasons. They included two patients suffering from gastric ulcer, one suffering from cirrhotic liver, one with indigestion, and a diabetic whose diet included much cream. For a fortnight shortly before the onset of his illness, one patient, not previously a heavy milk drinker, had been taking three to four pints a day. Two of the patients while at home drank nothing but pasteurised milk. Shortly before the onset of their illness they had been away from home and drank raw milk. It is possible, as Dalrymple-Champneys suggests,[8] that the regular consumption of *Br. abortus* infected milk produces an immunity.

In certain cases an inquiry was made into the infection with *Br. abortus* of the milk-supply from which patients obtained their milk. As a result bacteriological proof of the presence of the organism in the milk was obtained in 23 instances, and in 16 others contagious abortion was found to be present in the herd. In several instances two or more patients were found to obtain their milk from the same source.

Epidemiological Study

Number of cases reported by years.—From 1929 till 1931 there was an increase in the number of cases reported year by year. In the years 1932–33–34 the figures have been almost steady. The numbers reported in the various years were: 1929, 3; 1930, 10; 1931, 13; 1932, 24; 1933, 22; 1934, 24. The date of one patient's illness cannot be exactly determined.

Geographical distribution.—Twelve cases occurred in Edinburgh, 9 in Aberdeen, 5 in Glasgow, 4 in Dundee, 17 in Aberdeenshire, 11 in Fifeshire, 6 in Kincardinshire and in Banffshire, 5 in Angus and in Ross and Cromarty, 4 in Stirlingshire, 2 in Ayrshire and in Inverness-shire, and 1 in Moray, Perthshire, Dunbartonshire, Renfrewshire, Dumfriesshire, Roxburghshire, Berwickshire, East Lothian, and in the Stewartry of Kirkcudbright.

Sex incidence.—As in other countries the disease has been found to attack males predominantly. In our series there were 62 males (63·8 per cent.) and 35 females (36·2 per cent.). Hardy and his associates[9] have pointed out that in their series the preponderance of males was due to their engaging to a greater extent in occupations involving contact with animals. Of all their cases 77 per cent. were males and 23 per cent. females. When they excluded those having contact with livestock or carcasses they found the proportion was 51 per cent. males and 49 per cent. females. We have made a similar exclusion and find that males still predominate, the figures being: males 49 (59 per cent.) and females 34 (41 per cent.).

Age incidence.—This is shown graphically (Fig. 1). It will be seen that our results agree with those of observers in other countries in that the disease affects chiefly young adults.

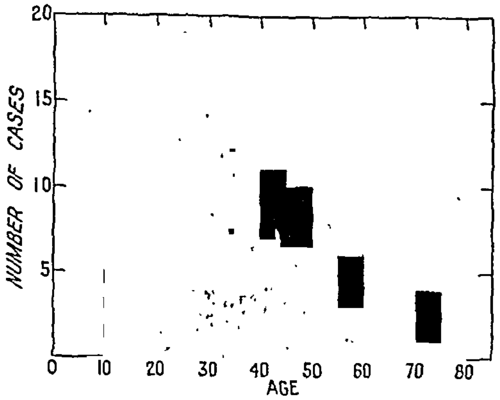

FIG. 1.—Age distribution.

Occupational incidence.—Apart from the large number of cases that occurred among those handling livestock or meat to whom we have already referred, the only notable feature under this heading was the relatively high proportion of doctors and nurses affected. There were four of each. We are not inclined to consider that this indicates that they run any special occupational risk, but rather that in their cases better facilities are available for diagnosis.

Duration of illness.—In 92 of the cases recorded the duration of illness was ascertained. It varied from 2 to 54 weeks, the average duration being 10 weeks. One patient, the report of whose case has not been used in computing the average duration of illness, has been ill for 108 weeks.

Case-mortality.—In the series there were 5 deaths.

One was of a patient suffering from disseminated sclerosis and was probably not due to undulant fever. Of the others, the first was of a young man, aged 29, whose death after 10 weeks' illness followed on a severe gastric hæmorrhage. This case has already been reported.[10] The second was of an elderly woman, aged 72, who was ill for approximately 44 weeks. About a month before her death she began to show signs of heart failure. The third was of a man, aged 68, who died after 44 weeks of illness. He was found to have pancreatitis, and from his pancreas *Br. abortus* was cultured (Case 2).

The fourth was of a man aged 32. His illness was acute with irregular bouts of fever. Night sweating, headache, and joint and muscle pains were pronounced symptoms. His liver and spleen were both much enlarged, and the presence of free fluid in his abdomen gave rise to the suspicion that he had a tuberculous infection. Laparotomy was therefore carried out. No signs of tuberculosis were present, but he was found to have marked cirrhosis of the liver. The abdomen was drained of free fluid and closed. A week later, seven weeks after the onset of his illness, the patient died. Culture of the free fluid from the abdomen failed to give a growth of *Br. abortus*. In view of the rapid onset of cirrhosis of the liver during an acute attack of undulant fever we feel justified in ascribing this patient's death to undulant fever.

If the patient suffering from disseminated sclerosis is omitted there are four deaths in our series giving a case-mortality of 4·1 per cent.

Bacteriological Investigation

Agglutination tests from patients.—In all cases an agglutination titre for *Br. abortus* of 1 : 100 or more was obtained with the patient's serum. In some cases it was much higher, the highest titre found being in a fatal case when it rose to 1 : 51,000. The titres were as follows:—

Titre.	Number.
1 : 100 – 1 : 199	7
1 : 200 – 1 : 399	7
1 : 400 – 1 : 799	10
1 : 800 – 1 : 1,599	13
1 : 1,600 – 1 : 3,199	21
1 : 3,200 – 1 : 6,399	17
1 : 6,400 – 1 : 12,799	12
1 : 12,800 – 1 : 25,599	6
1 : 25,600 – 1 : 51,000	1
1 : 51,000 –	1

As the agglutination tests were carried out in different laboratories with different antigens and different times and methods of incubation they are not strictly comparable. They demonstrate, however, a preponderance of reactions between the titres of 1 : 800 and 1 : 12,799.

In all cases the usual Widal reaction with *B. typhosus* and *B. paratyphosus* B antigens was also carried out. One patient gave an agglutination reaction with *B. paratyphosus* B antigen in dilution up to 1 : 400 and also with *Br. abortus* antigen in dilution up to 1 : 800. As her clinical condition was more suggestive of paratyphoid, she was considered to be suffering from that condition and is not included in the list. Also excluded is a child suffering from bacillary dysentery, whose serum agglutinated *Br. abortus* in dilutions up to 1 : 200.

Cultural tests from patients.—In some cases cultures of blood, urine, fæces, or organs were carried out. The results were as follows:—

	Cultures.	Positive and per cent.
Blood	51	12 (19·2)
Urine	11	1
Fæces	7	1
Pancreas	1	1
Ascitic fluid	1	0

In every instance the organism isolated was *Br. abortus*. There is no evidence of any other member of the genus brucella being present in Scotland.

Clinical Features

We present an analysis of the chief clinical features noted in our cases in the hope that thereby we may assist physicians in recognising the disease. We would, however, give a warning that the absence of any or most of the signs and symptoms recorded should not be taken to exclude the possibility of undulant fever. Few if any diseases are so varied in their manifestation and course. Hughes[11] writes "So variable are the symptoms and so uncertain is the duration and course of the fever that it is impossible to give a description to which all cases can be referred."

Nature of onset.—In 57·3 per cent. of the cases the onset was said to be insidious. Not atypica of the descriptions received were the following reports. (1) "I cannot say whether the patient developed undulant fever in January or February of this year. I know that from the end of last year till the beginning of this year she had been feeling out of sorts." (2) "Went to bed March 28th. Not well for a week or two before." (3) "Confined to bed on Sept. 8th out for fully a month prior to that date had complained of tiredness." (4) "For previous six weeks felt tired and disinterested in work and had loss of appetite."

Of all the cases 42·7 per cent. were said to have been of sudden onset. In only a few cases was detailed nformation received as to how sudden.

The onset of one patient's illness appears to be of xtreme rapidity, but symptoms of illness had been present previously. "She had not felt very well for ome days, and while at work she suddenly developed a evere pain in stomach and vomited. She went to bed but pain persisted, and shivering became worse. Was een about an hour later. She was in bed very collapsed and pale and in the middle of a severe rigor. The pain was referred to the epigastrium."

The percentage incidence of various signs and symptoms is given in Fig. 2.

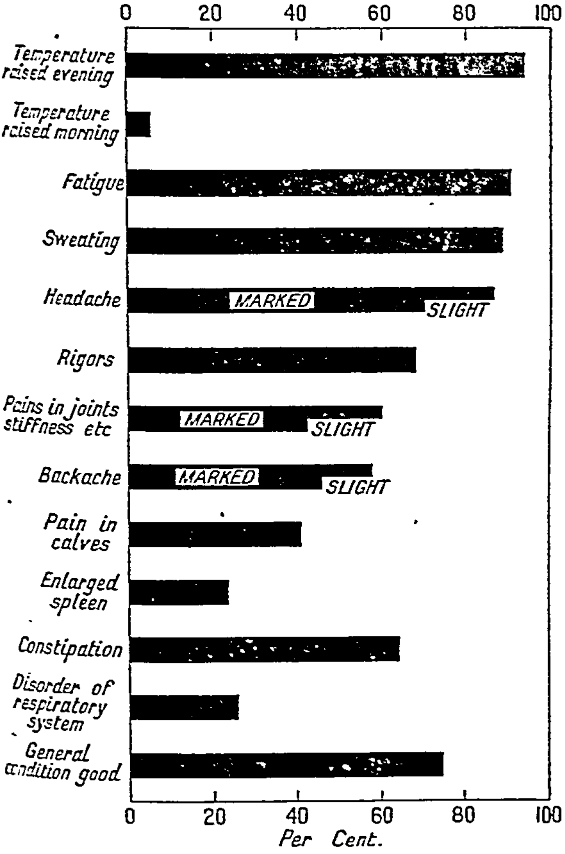

FIG. 2.—Percentage incidence of certain signs and symptoms.

Fever.—In every case fever was present. Generally this was found in the evening although in 6 per cent. of our cases the temperature was raised in the morning. Some of the temperature charts received showed an undulating curve with periods of about a week of high evening temperature followed by two or three days when the temperature was little raised. In others the temperature was raised every evening during the course of the illness. The temperature records received were, however, too few for any accurate estimate to be formed of the type of fever most commonly present.

Fatigue was almost always present and frequently was the most conspicuous symptom. Sometimes it was present all day, but more usually it was present in the afternoon.

Sweating was usually a marked feature. A common history was that the patient had to change his night clothes once or twice during the night.

Headache was commonly present. Often it was occipital but there was no one localisation. At times it was accompanied by pain in the back of the neck which was accentuated when the patient tried to turn or lift his head.

Rigors were noted in 68 per cent. of the cases. Generally they occurred in the afternoon. In a few cases they were reported to be severe, but more usually they consisted in a feeling of chilliness.

Backache, pain in joints, pain in calves, stiffness.—A large number of patients complained of these symptoms. The proportion of cases in which they occurred will be found in the Table. Arthritis was also frequently present. The joints affected were of the shoulder, elbow, hand, and knee.

Respiratory system.—The respiratory disturbances reported were, for the most part, indicative of slight congestion of the lungs. In only 3 cases was a cough reported to be present, and in 2 of these it was accompanied by the expectoration of muco-purulent sputum. One case was at first diagnosed as pleurisy owing to the presence of a severe pain in the side.

Gastro-intestinal system.—No specific inquiry was made as to the presence of abdominal pain. This is recorded in numerous reported cases, and in Hardy's [9] series its frequency was 30 per cent. In the reports we received information of its presence was volunteered in 7 cases. Sometimes it was accompanied by vomiting. Abdominal tenderness was also present in some instances. This was generally felt over the epigastric region, but in one case it was found over the gall-bladder, and in another over the liver. One patient was operated on for a subacute appendicitis. Simpson [12] points out the possibility of brucella infection presenting the characteristics of an acute abdominal condition. He records 94 cases in which cholecystectomy was performed and 26 in which appendectomy was performed. Gilbert and Coleman [13] have found brucella in the bile collected after cholecystectomy.

Loss of appetite was reported in some cases, and we believe it to be a common symptom. It was at times accompanied by a bad taste in the mouth. In a few cases the intestinal symptoms were the most prominent. We have already stated that one patient died after a severe gastric hæmorrhage. We also record two patients who died of the disease, one of whom had pancreatitis and the other cirrhosis of the liver.

Glandular system.—With three patients the onset of illness was accompanied by a swelling of the cervical glands. This suggests that the infection may have been through the tonsils. The work of Carpenter and Boak [14] who isolated the organism from 8 of 56 pairs of tonsils would support this view, but in Scotland after an examination of 100 pairs of tonsils Milne [15] did not find brucella.

Cutaneous system.—Eight of the patients had a skin rash. This was of a macular, sudaminous, or seborrhœic type, and in one case extended to the mucous membrane of the mouth and throat.

Cardiovascular system.—One patient, an elderly lady, died of heart failure. This was probably a sequel to her long illness. Another patient developed extrasystoles. Anæmia was frequently noted, and in four cases the medical attendant was struck by the yellow colour of the patient. In one case the blood pressure was markedly low, and in two epistaxis occurred.

Neurological system.—In a few cases irritability was very evident. More frequently the patient was greatly depressed. One patient who subsequently died of the disease was delirous at times. Insomnia was sometimes recorded. Diplopia was present in one instance due to paralysis of the muscles of the left eye.

Relapses occurred in 44 per cent. of the cases, at intervals of from five days to one month. In some cases three or more were reported. This experience differs from those of Hardy [9] and Simpson [12] in the United States of America, who both found relapses in only 15 per cent. of their cases.

General condition.—A notable feature of the disease is that frequently the condition of the patient looks much better than the physician would be led to expect from the height of the temperature. In 75 per cent. of our cases the general condition was good.

In some respects our results agree with those found in other countries, while in others they differ. We give a tabular comparison of the relative frequency of various symptoms and signs as found by Hardy [9] in the United States and by ourselves in Scotland.

	Hardy's results (per cent.).		Our results (per cent.).
Weakness	100	Fatigue	92
Sweating	84	—	88
Headache	62	—	87
Backache	48	—	59
Rigors	66	—	68
Palpable spleen	33	Enlarged spleen	24
Constipation	55	—	64
Relapses	15	—	44

Discussion

An analysis of the cases reported shows that those engaged in employment involving contact with animals or meat ran a special risk of contracting undulant fever. In this category were 14 of our 97 cases, a proportion much greater than that borne by those classes to the population as a whole.

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THE HÆMOGLOBIN LEVEL

AMONG LONDON MOTHERS OF THE HOSPITAL CLASS

AND ITS PROBABLE BEARING ON SUSCEPTIBILITY TO INFECTION

By HELEN M. M. MACKAY, M.D., F.R.C.P. Lond.

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Assisted by LOREL GOODFELLOW

THE prevalence of anæmia due to iron deficiency among infants and young children has caused attention to be focused upon the hæmoglobin level in their mothers. In this paper particulars are given of the results of hæmoglobin estimations in three groups of women, a total of 368 persons. Some of the figures have already been published[1] but the results are further analysed here. The estimations were made with a Haldane hæmoglobinometer from blood obtained from a prick in the lobe of the ear. The standard used latterly was a Price-Jones-Haldane tube,[2] and figures obtained with an earlier hæmoglobinometer have been corrected to correspond with the Price-Jones-Haldane standard.[3]

A GROUP OF NURSING MOTHERS

The first group consists of 50 nursing mothers at different stages of lactation (from the first to the tenth month) whose blood was examined in 1930.[1] Their babies were attending the Mothers' Hospital infant welfare centre. Babies at this centre showed the usual nutritional anæmia when not treated with iron; those who were entirely breast-fed until seven months of age had an average hæmoglobin level at 11–12 months old of 72·5 per cent. (Price-Jones-Haldane standard), which, reckoning the infants' normal as 86 per cent. is 13·5 per cent. below normal. The economic status of the parents varied, but was on the whole fairly good. Some of the fathers were small shopkeepers employing a domestic servant; some were shop assistants or clerks; others were manual workers. Relatively few were unskilled casual labourers. The mothers' ages ranged from 18 to 42; 27 were primiparæ and 23 multiparæ, the latter with an average of 2·9 pregnancies each. The average hæmoglobin level of these women was 82·8 per cent. (Table I.), and in 58 per cent. of them it was below 85 per cent. There was very little difference between primiparæ and multiparæ; the former averaged 83·4 per cent., the latter 82·4 per cent. Taking Price-Jones's average of 98·26 per cent. for healthy women, these mothers averaged 15·5 per cent. below his normal; and on this basis the degree of was very evident. More frequently the patient was greatly depressed. One patient who subsequently died of the disease was delirous at times. Insomnia was sometimes recorded. Diplopia was present in one instance due to paralysis of the muscles of the left eye.

Relapses occurred in 44 per cent. of the cases, at intervals of from five days to one month. In some cases three or more were reported. This experience differs from those of Hardy[9] and Simpson[12] in the United States of America, who both found relapses in only 15 per cent. of their cases.

General condition.—A notable feature of the disease is that frequently the condition of the patient looks much better than the physician would be led to expect from the height of the temperature. In 75 per cent. of our cases the general condition was good.

In some respects our results agree with those found in other countries, while in others they differ. We give a tabular comparison of the relative frequency of various symptoms and signs as found by Hardy[9] in the United States and by ourselves in Scotland.

	Hardy's results (per cent.).		Our results (per cent.).
Weakness	100	Fatigue	92
Sweating	84	—	88
Headache	62	—	87
Backache	48	—	59
Rigors	66	—	68
Palpable spleen	33	Enlarged spleen	24
Constipation	55	—	64
Relapses	15	—	44

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A GROUP OF PREGNANT WOMEN AND GIRLS

The second group consisted of 109 pregnant women and girls in homes for unmarried mothers. They came in at different stages of pregnancy, often in the last month, and their previous social circumstances varied greatly. Nearly all were primiparæ, and they were for the most part young; 38 were under 21 years of age and only 6 were 31 years or over—their ages ranged from 14 to 40 years. The hæmoglobin estimations were usually made at 1–2 weeks after admission. Their babies also showed nutritional anæmia. The average hæmoglobin level of the mothers was 83·5 per cent.—i.e., within 1 per cent. of the average of the group of nursing mothers already considered (Table I.). Approximately 60 per cent. of the group had a hæmoglobin level below 85 per cent., which is about the same proportion as among the nursing mothers.

TABLE I.—*Hæmoglobin Level in Women*

Group.	No. of women.	Hæmoglobin percentage.						
		Average.	Lowest.	Highest.	Under 70°/ₒ	70–84 %	85 % and over	90 % and over.
					No. and per cent.			
Our cases. Nursing mothers ..	50	82·8	66	103	1 (2·0)	28 (56·0)	21 (42·0)	7 (14·0)
Expectant mothers, unmarried.	109	83·5	58	120	5 (4·6)	61 (56·0)	43 (39·4)	28 (25·7)
Mothers at children's hospital.	209	87·2	48	106	6 (2·9)	60 (28·7)	143 (68·4)	83 (39·7)
Above three groups combined.	368	85·5	48	120	12 (3·3)	149 (40·5)	207 (56·3)	118 (32·1)
Price-Jones's cases. Healthy women.*	100	98·26	90	110	0	0	0	100 (100·0)
Aberdeen cases. Women escorts at dispensary.	455	—	19	—	63 (13·8)	150 (33·0)	242 (53·2)	—

* Hospital nurses and women students.

A GROUP OF LONDON MOTHERS AT A CHILDREN'S HOSPITAL

The third group examined consisted of 209 women who had brought children to the out-patient department of the Queen's Hospital for Children, where most of our work on nutritional anæmia in babies has been done. This being a children's hospital only, none of the women attended as patients. They had all borne children. They varied in age from young mothers of 21 attending with a first child, to a grandmother of 61 years. The number of pregnancies through which each woman had passed varied from one to sixteen; 30 women had had eight or more. The time that had elapsed since the last confinement might be short or long, from under one month to thirty years. The economic status of the mothers was, on the whole, considerably worse than that of the nursing mothers attending the Mothers' Hospital. The fathers were for the most part manual workers, and some were out of work. On the other hand, a few were small shopkeepers and in more comfortable circumstances. Nevertheless the average hæmoglobin level of the mothers was slightly higher, namely, 87·2 per cent. as compared with 82·8 per cent. for the nursing mothers at the maternity hospital; of the total approximately 32 per cent. of women had a hæmoglobin level of under 85 per cent. (Table I.). The slightly lower hæmoglobin level of the nursing mothers cannot apparently be attributed to their more recent confinements, for if we select from the group at the Queen's Hospital all those who had been confined within ten months of the date of estimation we have a sub-group of 39 mothers with an average hæmoglobin level of 88·5 per cent.—i.e., a figure closely approximating to the average for the whole group. However, most of these 39 mothers who came to the Queen's Hospital were not breast-feeding their babies, and it is possible that the extra drain of lactation might bring about this difference in hæmoglobin level. Whether or not multiple pregnancies increase the tendency to anæmia is not brought out in these figures; 37 mothers who had been pregnant once only showed an average of 88·2 per cent. hæmoglobin, and 30 mothers, each of whom had been pregnant eight times or more (an average of 10·2 pregnancies each), were only about 3 per cent. lower—i.e., they had an average of 85·0 per cent. hæmoglobin. This comparison, however, does not settle the point, for in order to judge the effect of multiple pregnancies, the hæmoglobin estimation should have been made in every case either during pregnancy or alternatively shortly after confinement; whereas in our cases the estimation was often years after the last confinement. Nor was there much change in the average hæmoglobin level with increasing age (Table II.). The maximum difference between the average for the different age-groups is less than 4 per cent.

TABLE II.—*Hæmoglobin Level at Different Ages*

Mothers at the Queen's Hospital for Children

Age.	No. of women.	Average hæmoglobin percentage.
21 to 25 years ..	.. 18	85·2
26 „ 30 „ ..	.. 43	89·1
31 „ 35 „ ..	.. 49	87·4
36 „ 40 „ ..	.. 49	87·3
41 „ 45 „ ..	.. 24	85·2
46 years upwards	.. 17	86·6

THE DEGREE OF ANÆMIA IN THESE GROUPS OF WOMEN AS COMPARED WITH THAT IN LONDON BABIES

Price-Jones [2] has published hæmoglobin figures for healthy women (Table I.). His estimations were made on women students and hospital nurses. Since our earlier standard has been corrected by his,[3] our figures should be comparable. His average was 98·26 per cent., the highest values obtained being 110 per cent., and the lowest 90 per cent. If, then, we call 90 per cent. the lower limit of normal, then those who reached normal in our groups numbered only 14 per cent. (nursing mothers), 26 per cent. (pregnant women), and 40 per cent. (children's hospital mothers); or 32 per cent. for the three groups combined (Table I.). Again, compared with his average, our groups were lower by 15·5, 14·8, and 11·1 per cent. respectively, and the three groups combined averaged 12·8 per cent., lower.

Is this likely to entail any serious defect in health in these women? By analogy with infants, it would certainly seem so. In two groups of artificially fed infants, one set getting iron therapy and the other acting as controls, the difference in hæmoglobin level at six months old was about 7 per cent., and by twelve months old had increased to about 13 per cent. (corrected figures, Price-Jones-Haldane standard).[3] With this difference in average hæmoglobin level the morbidity-rate of the control group of babies was approximately double that of the iron group.[1] If we call the normal during the second half year of life 86 per cent., then the controls at six months old were 14 per cent. and at twelve months old 16 per cent. below normal. Hence we may say that in infants an anæmia comparable in grade to that existing among these mothers doubled the morbidity-rate. It therefore seems reasonable to expect that the grade of anæmia existing among these mothers was sufficient to greatly increase their susceptibility to infection.

A COMPARISON OF OUR FIGURES WITH THOSE OBTAINED IN ABERDEEN AND ELSEWHERE

Anæmia among women is evidently common also in America. Brooke-Bland and Goldstein[4] in the United States state that about 50 per cent. of 200 maternity ward patients, whom they examined, were anæmic by their standard—i.e., had less than 3·5 million red cells per c.mm. Galloway[5] has published figures for the hæmoglobin values during pregnancy and afterwards of 222 private patients in Chicago, observed systematically. His estimations were made with a Sahli hæmoglobinometer, so that his values are not strictly comparable with ours. But his findings establish the fact that anæmia was very common among these private patients, for 65 per cent. of them showed at some time under 65 per cent. hæmoglobin.

A comparison of our figures for London mothers with those published from Aberdeen by Davidson and his colleagues[6] is of interest (Table I.). These workers also used the Price-Jones-Haldane hæmoglobinometer. The Aberdeen figures were obtained from the poorest class of the community. The women examined came as escorts for patients to the Aberdeen dispensary, an institution for those not eligible for medical attention under the panel system and unable to pay for medical help. The wage-earner of the family was *usually* unemployed. Hence these women came from a poorer stratum of society than most of our cases. If our London figures are combined, we find that approximately 44 per cent. of women had a hæmoglobin level under 85 per cent., whereas of the Aberdeen women about 47 per cent. were below this level. But what is more striking is that many more of the Aberdeen women were markedly anæmic; of our cases, 3·3 per cent. had less than 70 per cent. hæmoglobin as compared with about 14 per cent. of the Aberdeen cases.

IRON DEFICIENCY AND ACHLORHYDRIA IN MOTHER AND CHILD

Is this anæmia primarily due to iron deficiency? The Aberdeen workers bring forward evidence that it is.[6] They show that the iron in the diet of these families was low and hold that for the women it is often inadequate to meet the demands resulting from menstruation, pregnancy, and lactation. They show also the good response to iron treatment in 20 of the most anæmic cases. If our sample figures are representative of the hæmoglobin values of London working-class mothers (and more information is certainly desirable), we suggest that the majority show some degree of iron deficiency. How far dietetic deficiency in relation to the needs of the period of child-bearing is directly responsible, and what share of the responsibility for anæmia is due to achlorhydria or hypochlorhydria and consequent deficient absorption, still requires to be settled. The Aberdeen workers carried out test-meals on 28 women with hæmoglobin levels under 70 per cent. and 9 women with over 80 per cent. hæmoglobin, and found that 25 of the first group and one of the second group suffered from achlorhydria or hypochlorhydria. A similar incidence of hypochlorhydria and achlorhydria has been demonstrated by Davies and Shelley[7] among anæmic women either pregnant or recently confined. In their series of 26 anæmic women, attending a London hospital, 23 had deficient or absent hydrochloric acid secretion.

Achlorhydria will undoubtedly increase the tendency to anæmia, but may achlorhydria be itself the result of iron deficiency? The very interesting facts reported by Hawksley, Lightwood, and Bailey[8] concerning achlorhydria in babies and young children with iron-deficiency anæmia may have an important bearing on this point. In 12 out of 13 anæmic children examined by them, fractional test-meals revealed achlorhydria, and in 3 cases examined a year or more after treatment the achlorhydria still persisted. Is the achlorhydria due to the anæmia? If so, is nutritional anæmia in infancy a causal factor in the achlorhydria of adult life; and hence does it predispose to the iron-deficiency anæmia common among women? All this is hypothesis and more facts are required before it is possible to arrive at any conclusion.

Again, Strauss[9] has established the fact that iron deficiency in the pregnant woman causes anæmia in her offspring. So the treatment of pregnant women with iron in adequate doses and for a sufficient period would probably do much to lessen the incidence of anæmia among their babies—though we would urge that direct treatment of the baby should certainly not be neglected. It must be remembered that treatment of a nursing mother with iron does not apparently increase the iron available in her milk.

In human nutrition we are apt to take short views. Work with laboratory animals indicates the need of much longer views. In anæmia we see the effects of breaking a dietetic commandment visited on the second generation. Fortunately the remedy is simple.

SUMMARY

The average hæmoglobin level in 368 women of the hospital class—pregnant women or mothers—was 85·5 per cent. as estimated with the Price-Jones-Haldane hæmoglobinometer. As compared with Price-Jones's average figure for healthy women (98·26 per cent.) they were 13·7 per cent. lower, and of the total number less than a third had a hæmoglobin level of 90 per cent. or over; 90 per cent. being the lowest value among Price-Jones's series of healthy women. The degree of anæmia among the women was of a similar order to that existing among babies of six to twelve months old of the same social class. This anæmia of babies is sufficient to double their morbidity-rate. By analogy it is probable that anæmia is an important factor in lowering resistance to infection among women. The inter-relationship of iron deficiency in mother and child is discussed. Routine iron therapy of expectant mothers and of babies is urged.

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THE INFLUENCE OF LARGE DOSES OF POTASSIUM CHLORIDE ON MYASTHENIA GRAVIS

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THE action of eserine, and of its analogue Prostigmin, in the relief of myasthenic symptoms (recently described by Mary Walker [1] [2] and confirmed by Pritchard[3] and Laurent[4]) has not yet received a wholly adequate explanation. The suggestion that eserine acts by delaying the destruction of acetylcholine by choline esterase at the motor nerve-ending seems the only workable hypothesis at present. Any substance known to facilitate the production or the utilisation of acetylcholine might therefore be expected to exercise a favourable influence on myasthenia.

Feldberg and Vartiainen,[5] in the course of experiments on the superior cervical ganglion of the cat, found that the addition of potassium chloride to the perfusing solution stimulated the ganglion cells. They also found that a dose of potassium chloride not large enough to do so directly, "raised the excitability of the ganglion cells to preganglionic stimuli, to acetylcholine and to other chemical stimulants." The enhancement of the stimulating effect of acetylcholine by potassium ions was found to be "of the order of 50 per cent." Further, they found that eserine "perfused through the ganglion in weak concentration (e.g., 1 in 10^6) strongly sensitises the ganglion cells to injections of acetylcholine, lowering the threshold dose 8 to 20 times. It has a weak, non-specific sensitising action, lowering the threshold by one-third to one-half for other substances." The latter include potassium ions.

In view of these findings we decided to investigate the possible influence of potassium chloride, in doses large enough to raise the blood potassium significantly, on cases of myasthenia.

In a preliminary investigation, using a modified technique, we determined the level of potassium in the blood plasma of 10 normal subjects and of 6 myasthenics. Our early results suggested that there might be a significant lowering of the plasma potassium in myasthenia. Repeated investigations on the same subjects, however, showed us that this was not so. One of the misleading factors was that the potassium level rises 2 or 3 mg. per 100 c.cm. after a meal; another that older subjects gave higher results, and all our myasthenics were young. Further, the 2 myasthenics who gave the lowest readings of all had such difficulty in swallowing that they were on a diet deficient in meat and vegetables, the two chief sources of potassium.

Method of potassium estimation.—Clear, non-hæmolised serum or plasma is deproteinised by means of tungstic acid (Folin and Wu), and the clear supernatant fluid is treated with nearly saturated sodium cobaltinitrite solution to precipitate the potassium as sodium potassium cobaltinitrite. This precipitate is washed with distilled water and a solution of metaphenylenediamine hydrochloride is added and the precipitate allowed to dissolve in this acid solution in the boiling water bath. A yellow colour is produced varying in intensity with the concentration of nitrite. This colour is compared with the colour produced by a standard potassium solution similarly treated, in a colorimeter.

This method is open to the objection that the colour produced by the metaphenylenediamine hydrochloride does not bear a linear relation to the concentration of nitrite, but this difficulty is easily overcome by using several standards representing different quantities of potassium. The advantages of the method are speed, simplicity, and sensitiveness, a perfectly adequate colour being produced by quantities as low as 0·2 c.cm. of plasma, provided a micro-colorimeter is used.

The error of this method is not more than ± 3 per cent.; results have been verified repeatedly by the permanganate and oxalic acid titration method of Kramer and Tisdall, and all the estimations have been carried out in duplicate.

The 10 normal subjects gave the following results expressed in mg. per 100 c.cm.:—

21·4, 17·5, 22·5, 15·2, 15·2, 15·9, 15·8, 15·8, 17·0, 18·0,

and the six myasthenics the following:—

15·7, 16·4 later 13·8, 15·2 later 15·8, 14·2, 15·8, 15·2.

Although the results in cases of myasthenia have always been rather low, we do not feel inclined to attach much importance to this, since a few of the normals have been equally low.

THERAPEUTIC RESULTS

Three patients with myasthenia were given 2 grammes potassium chloride orally five times a day, each dose being dissolved in half a tumblerful of water. They all claimed some subjective improvement, starting half an hour after each dose and passing off in the course of the next hour. Objectively we observed some slight diminution in ptosis, a little improvement in the range of ocular movement and increases of from 3 to 5 lb. in the power of the grasp. We considered this result encouraging, but by no means convincing. We then decided to try large single doses in the hope of obtaining a more clear-cut improvement. The accompanying photographs illustrate the effect of a dose of 12 g. given in a tumblerful of water. Before treatment the patient has well-marked bilateral ptosis although she is making a maximum effort to open her eyes. Her best effort at showing her teeth only reveals the upper incisors, and there is no trace of a nasolabial fold. The second photograph, taken under similar circumstances 45 minutes after potassium chloride, shows that the ptosis has almost completely disappeared. Retraction of the lips is improved, so that the canines are clearly visible, and the nasolabial fold is evident.

The 5 patients who have received single large doses have all shown results of a similar order. Ptosis, external ocular movements and facial appearance have always been improved to a greater extent than the limbs, although the recording dynamometer has shown constant increase in the power of the grasp of 3–15 lb. according to the case. Generally speaking, the cases with the greatest initial weakness have given the best response. One patient in particular, who was so weak that she could not hold the dynamometer, recorded a grasp of 10–15 lb. on every occasion after a large dose of potassium chloride.

In 2 cases we have taken the opportunity of

(References continued from previous page)

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estimating the plasma potassium before and an hour after the ingestion of 12 g. of potassium chloride. A considerable rise took place in each case. The preliminary figures were 14·7 and 15·2 mg. per 100 c.cm., and they increased to 22·6 and 27·4 respectively.

Six patients with myasthenia have taken the salt daily for the past two months. Individual doses have varied from 4 to 6 g. and these have been taken six times a day. The largest total given in one day has been 40 g. This treatment has proved a valuable adjunct to prostigmin. Several of the patients complained that after the effect of prostigmin had worn off, they felt somewhat tired and listless. They have found that a dose of potassium chloride taken before the action of prostigmin has ended, relieves the feeling of exhaustion and to some extent prolongs the improvement brought about by this drug.

FIG. 1

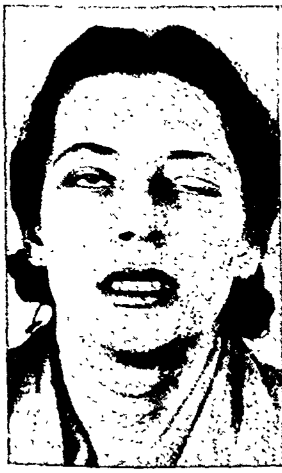

FIG. 2

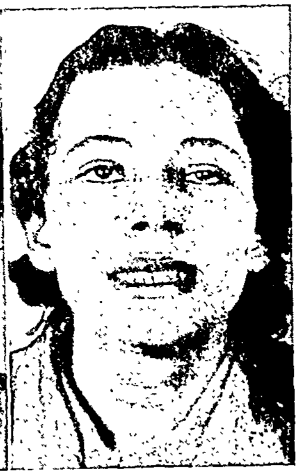

FIG. 1.—Before administration of potassium chloride. The patient is doing her best to open her eyes and clench her teeth.

FIG. 2.—Three-quarters of an hour after 12 g. potassium chloride. Similar efforts give better results.

Diuresis, of course, occurs constantly after each dose of the potassium salt. The only unpleasant symptom has been a mild diarrhœa which develops only from time to time in the course of prolonged administration. This can easily be controlled by drachm doses of bismuth carbonate. Nausea has followed the larger doses, but has not troubled the patients when smaller doses were being taken regularly.

The results obtained with the largest doses of potassium chloride tolerated by the patients are still somewhat short of the effect of 0·5 mg. prostigmin given by injection. This was to be expected if the action of potassium is the same as that of eserine—namely, to potentiate acetyl choline. Feldberg and Vartiainen[5] had found that eserine increased the effectiveness of acetylcholine 8 to 20 times, while potassium chloride only increased it by about 50 per cent. Eserine is, therefore, from 16 to 40 times more potent than potassium in this respect. The diuretic action of potassium salts no doubt accounts for the fact that the improvement which follows its administration never lasts more than two hours even after the largest dose.

It was not possible to demonstrate any increase in the potency of prostigmin when potassium was given simultaneously.

SUMMARY

(1) Potassium chloride given in large doses (10–12 g.) by mouth gives a demonstrable improvement in myasthenia. (2) In small repeated doses it is a useful adjuvant to prostigmin. (3) The theoretical considerations which led to these experiments are described and discussed.

We are grateful to Dr. F. M. R. Walshe and Dr. E. A. Blake Pritchard for access to some of their cases.

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CLEFT PALATE

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THE question of how to deal with a cleft palate, especially when it is associated with a hare-lip, is one which arises every now and then in practice, and draws one up with a shock. Hare-lip by itself is a problem only of cosmetics, but cleft palate involves also a possibility of malnutrition and later of defective speech. As regards the former, suffice it to say that hare-lip should be repaired at the earliest convenient moment. The operation is reasonably safe, and the cosmetic result is often permanently successful; moreover, repair of the lip often reduces the defect in the palate, and hence makes subsequent closure simpler and more certain.

Cleft of the palate means that the child will be hard to rear, and will almost certainly suffer from under-nourishment with all its perils. The difficulties arise from the fact that sucking the breast or bottle is impossible if there is no adequate opponent for the tongue (as occurs in the major clefts of the palate), and these difficulties can only be overcome in one of two ways—namely, by the provision of a species of denture or plate for the infant, or by spoon, bottle, or fountain-pen-filler feeding. Of the former method I have no experience; the success of the latter can, I believe, be sustained only by careful and self-sacrificing perseverance on the part of the mother or nurse. Thus the child with a cleft palate has to surmount many hurdles in the first year or two of life, and it is not surprising that many succumb through inattention or indifference.

Sooner or later the question of closure of the palate has to be faced and, unfortunately, its consideration is too often postponed until the parents have observed the defective speech. The age at which this is evident seems to vary a good deal, and the lateness or earliness of speech is one of the factors which affect the results obtainable by operation. Striking an average, however, it may be said that defects are noticeable at, or before, the third year of life. In another paper[1] I have endeavoured to show how these defects arise, and how they are continued until such time as habits, difficult to eradicate, are formed. Clearly it is imperative to operate before these habits begin, and that means at or before the age of about two years.

As I have said already, many of these cases have an uphill fight and hang on to life with but slender threads. It is therefore my practice before operating on such young children to ask the guidance of my colleagues at the Newcastle Babies' Hospital, since by the mere surgeon many unsuspected cases of gross infantile disease are easily overlooked. Apart from the skilled assistance of pædiatricians no special pre-operative precautions are taken.

The Operation

Having decided that operation should be undertaken before speech has become an established habit, the next problem is the type of operation to be done, and at this point it should be recognised that the object in operating is to produce a partition between the oral and nasal cavities and to restore the palate to such a form and condition that it is able to reach the posterior pharyngeal wall and thus close off its cavity. Without this closure normal speech is virtually impossible, and a failure in this respect is responsible for a very large proportion of the cases in which bad speech remains after the classical operations. The fault in these operations lies in non-recognition of the fact that two halves of a cleft palate never together equal one whole palate, and that, owing to changes in the architecture of the whole skull, the nasopharynx is so capacious as to make it impossible for the repaired palate to meet the pharyngeal wall and thus obliterate the cavity. To be successful, then, an operation must aim either at reducing the size of the nasopharynx, or at increasing the mobility of the soft tissue in the palate. With the object of reducing the size of the nasopharynx, I devised the operation of pharyngoplasty, and, after some considerable experience, I am prepared to urge its adoption in all cases of cleft palate.

Pharyngoplasty aims at narrowing the capacious nasopharynx and at producing a ridge on the posterior pharyngeal wall, in imitation of the ridge of Passavant which normally arises in this situation during speech; against this ridge the soft palate can make contact and so close the nasopharynx. The operation is performed by making a transverse incision through the posterior pharyngeal wall at about the level of the anterior arch of the atlas and then suturing this in a vertical direction, thus narrowing the pharynx from side to side and, at the same time, producing a prominent ridge. The operation is performed using endotracheal anæsthesia, and can be carried out with precision at an early age. Observation of the results of pharyngoplasty after some years demonstrates the continued narrowing of the pharynx and is, of course, reflected in the speech results.

It is manifestly impossible to increase the amount of soft tissue in the palate, but there are many ways in which the maximum degree of mobility of the available tissue can be attained, and one of these—namely, division of the hamular processes—is of paramount importance. Division of the hamular processes sets free the tendons of the tensor muscles of the palate, these being the main obstacle to free mobility. Its efficacy can be demonstrated either on the living or the dead body, or on theoretical grounds after comparison of the normal skull with that of the cleft palate.[2]

Repair of the palate is carried out at the same sitting as the pharyngoplasty, and since each case must be judged on its merits little need be said of the exact procedure adopted. Suffice it to say that the hamular processes are always divided, and that an attempt is always made to reconstruct the nasal mucosa as advised by Veau.[3] The various flaps and incisions recommended from the time of Langenbeck onwards are used to fit the particular case.

After-treatment should not be elaborate, and during the healing process the less done to the palate the better. Feeding for the first ten days should consist of sterilised liquids, each meal being followed by a drink of sterile water. After this time, return to normal feeding should be gradual. Local treatment to the suture line is not necessary in infants.

The Results

Results of the combined pharyngoplasty and repair of the palate have given the greatest satisfaction, and my experience has been that if a child is operated on before defective speech habits have become firmly established, and if the palatal mechanism is restored (as is done in the large majority of cases), it will grow up without any of the stigmata of cleft palate speech. Such a claim may almost be regarded as fantastic in the light of experiences with classical types of operation, but nevertheless the statement is true. Moreover, this result is attained without any special training except such as can be given by the mother.

The *speech history* after operation varies somewhat. As emphasised above, most children submitted to pharyngoplasty and repair of the palate develop speech which is in every respect normal. Others pass through a phase when they develop some of the characteristic defects of cleft palate speech, but in the course of a few months, or a year or two, they lose these defects completely, so that it is impossible to say that they have ever suffered from this abnormality.

Secondary operation.—It must be a general experience that after the classical operations the majority of patients develop cleft palate speech and retain it for the rest of their lives. Such cases can often be restored to normal habits of speech by pharyngoplasty, division of the hamular processes, and some of the various methods devised for such secondary operations as I hope to publish in a further paper devoted exclusively to surgical technique. These cases nearly always require subsequent speech training, since they have acquired habits which have grown harder to overcome the longer they have existed.

Recognition of Functional Abnormality.—The question then arises as to when one has waited long enough before submitting a supposedly successful case of repair, with bad speech, to further operation. Admittedly the decision is difficult; it is going to depend on the ear, and on certain physical tests. The reference to the ear concerns the practitioner and not the patient, because nothing has retarded the progress of cleft palate surgery more than the fact that auditory acuity is low in most human beings. Practitioners vary widely in their ability to detect even quite gross defects in speech; but there are two characteristic faults which ought always to be recognisable—namely, the use of the glottic stop to replace consonants, and the formation of the pharyngeal or nasal "s." In the physical tests auditory judgment can be replaced by observation of facts. A child with cleft palate of the major degree cannot close the nasopharynx, and consequently cannot perform many of the normal evolutions such as clearing away pharyngeal mucus; in other words, he cannot snort. He cannot inflate balloons or blow soap bubbles, except with extraordinary effort in which nasal escape predominates. Hence, if operation is to be regarded as successful, the functions of snorting, balloon-inflation, and soap-bubble blowing must be carried out with facility and without real effort. In these respects, then, one has simple tests of the efficiency of one's surgical procedures, and if, despite careful speech training, any defect persists over a reasonable period after operation—say, a year or more—then secondary operation should certainly be considered. Where it can be proved that the patient can close the nasopharynx, as shown by the physical tests, no further surgical interference is required, and training should be continued.

The necessity for *speech training* is in my opinion an admission of surgical and physiological failure, but there is no doubt that such training plays a very important part in the after-treatment of the cases of cleft palate in which surgical failure has occurred, or in which the operation has been delayed too long. Speech training as carried out by Miss Freda Parsons of Birmingham is very impressive, since undoubtedly, as Miss Parsons claims, it is associated with pharyngeal and palatal muscular development. The attainment of a good result by speech training, however, is a long and laborious process which may extend over years without the attainment of perfection. Further, many of those trained are capable of excellent speech in the presence of their teacher, but make no attempt to use their training in the ordinary affairs of life. Again, trained speech very often lacks the carelessness and slovenliness of ordinary conversational English. This is no veiled and underhand shot at those who are doing magnificent and painstaking work ; it is merely a plea that the unfortunate sufferers from cleft palate should be submitted to early and physiological operation in order that they may be allowed to develop speech in a natural fashion.

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THE USE OF PURIFIED CASEIN IN SALT-FREE DIETS

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Synthetic Milk

Milk is generally forbidden when a patient is prescribed a strictly salt-free diet. The usual substitute is cream, which is quite satisfactory for many purposes, but it has obvious disadvantages for young children. Further, if the case to be treated is one of nephrosis with normal powers of nitrogen excretion, a reduction of the protein intake by substituting cream for milk may not be advisable.

A synthetic milk containing almost no sodium chloride has now been devised and used both therapeutically and experimentally. It is relatively easy to prepare and is a very fair substitute for natural milk. It is made from water, lactose, cream (United Dairies Ltd.), "ashless" casein (Glaxo Laboratories), and a salt mixture containing calcium, magnesium, potassium, iron, and phosphorus. Lactalbumen has not been added owing to the difficulty of obtaining a salt-free preparation of this protein (*vide infra*). The composition may, of course, be altered to suit individual requirements, and two varieties are here described. The first, which was made up as nearly as possible to a cow's milk formula, was quite palatable, and was used successfully in treating a child of 15 months with massive œdema and a normal blood-urea. This milk had, however, a slightly gritty taste, presumably owing to the rather high content of insoluble calcium salts. A second milk was therefore made which contained the amounts of protein, fat, and carbohydrate found in cow's milk, but in which the salt content was considerably reduced, so that the amounts of calcium, phosphorus, magnesium, and iron approximated very closely to the amounts of those elements found in human milk. This second milk is decidedly smoother in taste, and is recommended where a high mineral content is not required. Both milks prepared according to the directions below are neutral to litmus, and they can be kept for several days in a cool place.

PREPARATION OF MILKS

The following solutions are used :—

Stock Solution A.—Normal KOH (5·6 per cent.).

Stock Solution B. (Cow's milk formula.)—KH_2PO_4, 20·4 g., calcium lactate, 33·7 g., $MgSO_47H_2O$, 6·5 g., and $FeSO_47H_2O$, 0·10 g. (made up to 500 c.cm.).

Stock Solution C. (Milk with low mineral content.)—KH_2PO_4, 3·05 g., calcium lactate, 6·2 g., $MgSO_47H_2O$, 2·0 g., and $FeSO_47H_2O$, 0·10 g. (made up to 500 c.cm.).

B and C are not true solutions since some of the calcium salts are present in suspension.

Half a litre (18 oz.) of synthetic cow's milk may be prepared as follows :—

20 g. of ashless casein are suspended in 420 c.cm. of water, and 24 c.cm. of normal KOH (Solution A) are added. The mixture is heated to boiling with constant stirring. Then 50 c.cm. of stock solution B are added, and the milk is again boiled. It is allowed to cool and 25 g. of lactose and 2 oz. (60 g.) of cream are added.

The second variety of milk, with a lower mineral content, is prepared as follows :—

20 g. of ashless casein are boiled with 430 c.cm. of water and 13 c.cm. of normal KOH (solution A). Then 50 c.cm. of stock salt solution C are added and the mixture is again boiled. After cooling, 25 g. of lactose and 2 oz. of cream are added as before.

Precautions.—It is necessary to adhere closely to the prescribed conditions to obtain a smooth and homogeneous preparation, and the cream should not be added until the milk is nearly cold. Lactose is easily charred by hot alkali, and it is important that it should not be added until the milk has been neutralised by the stock salt solution. All preparations of casein may not have exactly the same alkali value. It may be necessary, therefore, to make small adjustments in the amount of KOH required to render the final product exactly neutral.

Since aluminium is so readily attacked by alkali, a saucepan of this material should not be used in the preparation of the milk.

Table I.—*Mineral Composition of Natural and Synthetic Milks* (mg. per 100 c.cm.)

—	Cow's milk, natural.*	Cow's milk, synthetic NaCl-free.	Human milk, natural.*	NaCl-free synthetic milk. Low mineral content.
Calcium ..	120	120	22·6	22·6
Phosphorus	94	94	14·0	14·0
Sodium ..	43	4	43	4
Chlorine .	93	6	87	6
Potassium.	156	304	74	118
Magnesium	13·5	13·0	4·1	4·1
Iron	0·11	0·4	0·096	0·4

* Analysis from McCance, Sheldon, and Widdowson.[1]

COMPOSITION AND USES

Table I. shows the relative mineral compositions of cow's milk, human milk, and the two varieties of synthetic milk. It will be observed that the two synthetic milks contain more potassium than do the corresponding natural milks, but physiologically there is no objection to this. Some of the extra potassium replaces the sodium found in the natural milk, and the remainder must be added to obtain a neutral solution if the calcium is added as the soluble lactate. The traces of sodium and chlorine are derived from the added cream.

The synthetic milks may be used for most purposes for which cow's milk is generally employed. They may be used for infant feeding, and for this purpose they may be sweetened with cane sugar. More cream may of course be added if desired. No claim is made that the milk is a "perfect" food for a growing baby. Owing to the omission of lactalbumen it may, for example, be deficient in cystine. A supplement of cystine could be added if a salt-free milk was to be the sole article of diet for a considerable time. For most purposes however this will be quite unnecessary, since casein is admittedly a protein of high biological value. Similarly, small amounts of copper could be added if desired.

Further it is to be noted that these synthetic milks contain no vitamin C. The added cream will supply some vitamins A and D but probably not enough for a growing child.

For older patients the milk may be used in tea, and in coffee and cocoa it is quite indistinguishable from ordinary milk. It has been used for cooking with considerable success, and in rice pudding, blancmange, milk jelly, and powder-custard, the slight flavour of the casein cannot be detected.

COST

"Ashless" casein, which is a "special acid-washed first grade acid casein," has been used throughout and costs 4*s.* per kg. Half a litre (18 oz.) of milk prepared as previously described costs about 6*d.* (casein 1*d.*, lactose 1*d.*, cream 4*d.*) A cheaper preparation of NaCl-free casein, "1st quality casein," costing 2*s.* 9*d.* per kg. has been investigated. Milk prepared with this casein is possibly not quite so palatable, and its price is only reduced by ½*d.* per 500 c.cm.

Salt-free Casein Bread

Salt-free diets with a high or even normal protein content are difficult to construct since the foods rich in protein—meat, fish, cheese, eggs, and milk—are those which contain a relatively high percentage of sodium chloride. A salt-free bread containing ashless casein has proved to be extremely useful in these cases, and it is almost indistinguishable from home-made salt-free bread prepared entirely from flour. This bread is made from 640 g. (22½ oz.) of flour, 156 g. (5½ oz.) of ashless casein, 15 g. (½ oz.) of yeast, and 425 c.cm. (15 oz.) of water, and is mixed and baked in the ordinary way. The relative compositions of ordinary bread and casein bread are shown in Table II. The cheaper casein would reduce the cost of 1 lb. of bread by about 1*d.*

TABLE II

	Ordinary bread (Plimmer [2]) g. per cent.	Casein bread g. per cent.
Protein	7·0	19·7
Carbohydrate	47·4	42·5

Summary

(1) A method is described for the preparation of two varieties of synthetic milk containing a negligible amount of sodium chloride. One milk has approximately the same composition as cow's milk, while the other has a lower mineral content. (2) The preparation of a salt-free bread containing 19·7 per cent. of protein is also described.

We wish to thank Miss B. Swayne for her assistance with the cooking. One of us (E. M. W.) is indebted to the Medical Research Council for a part-time grant.

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A NOTE ON THE VALUE OF THE DRINKER RESPIRATOR IN DIPHTHERIA, EMPYEMA, AND PULMONARY COLLAPSE

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THE Drinker respirator [1] has been employed in America since 1929 for paralysis of respiration in poliomyelitis, alcoholic coma, drug poisoning, drowning, and asphyxia neonatorum. Gordon, Young, and Top [2] in 1933 reported two cases of post-diphtheritic respiratory paralysis treated in the respirator. They were impressed by the possibilities of use of the apparatus for this condition. Since February, 1934, the first respirator purchased by the London County Council for use in its infectious hospitals has been stationed at the North-Eastern Hospital. This paper is a preliminary note on the use to which the apparatus has been put; a more detailed report is to be published later. Eight cases of diphtheria and two of empyema thoracis were treated.

IN DIPHTHERIA

The paralytic stage of diphtheria occurs roughly from the third to the sixth weeks. The manifestations suggest lesions of the nervous system. Our view is that these are central (bulbar), not peripheral. This is of importance because Wilson,[3] in discussing the types of respiratory failure in poliomyelitis, expressed the view that those of bulbar origin were the least amenable to treatment in the respirator. Paralyses, when they occur, tend to affect structures in a more or less regular sequence: the palate, the eyes, the heart, the pharynx, and the diaphragm being a common order. The last two often occur together. Death in this stage may be due to concomitant circulatory failure, but is usually the result of respiratory failure or broncho-pneumonia. Involvement of the lungs is of considerable importance in deciding whether a case is suitable for the respirator. It depends either directly upon the paralysis of respiration or is secondary to accumulated mucus in a paralysed pharynx. The function of the Drinker respirator is to replace or augment the failing respiratory musculature.

The eight cases of diphtheria were all severe, with extensive oro-pharyngeal membrane and moderate or severe toxæmia. All except two were given intravenous as well as intramuscular antitoxin. The doses varied from 64,000 to 160,000 units. In all except two there was clinical and/or electrocardiographic evidence of severe cardiac damage. Two cases (which recovered) had complete heart-block. The time of onset of paralytic phenomena varied from 17 to 40 days, but the diaphragmatic paralyses were strikingly consistent in their time of appearance: forty-second to fiftieth day. Of the eight cases, five recovered and three died. The experience culled from the series may be summarised thus:—

1. Cases must be put in the respirator early—as soon as diaphragmatic paralysis is suspected; otherwise there is considerable danger of broncho-pneumonia developing.

2. When exudative changes are present in the lungs the respirator is of little or no value.

3. The pharyngeal paralysis which so frequently accompanies the diaphragmatic must be treated thoroughly. Owing to the fact that the respirator employed was not tiltable, the valuable procedure of postural drainage could not be employed. Mechanical aspiration and manual removal of mucus are, however, adequate if carried out thoroughly. Nasal feeding is usually necessary and should be done without stopping the machine.

4. The patient should be retained in the respirator continuously. Among the recoveries, the shortest period necessary was 4 days and the longest 15 days. This provides valuable, and hitherto unknown, information concerning the natural duration of diaphragmatic paralysis in diphtheria. When there are signs that movement of the diaphragm is returning, the patient can be tried without the apparatus for short periods.

5. If the respiratory rate of the patient is grossly abnormal, no attempt should be made to synchronise the respirator with it; rather the apparatus should be adjusted to a rhythm of about 20 per minute in the expectation that this will be imposed upon the patient.

6. Positive pressures are without advantage and sometimes produce discomfort. Negative pressures need not be great. A variation of from 0 to −16 or −18 cm. of water is usually the maximum required. Hyperventilation, which has been practised in America to produce periods of apnœa whilst the patients are receiving attention, was not attempted in our series.

7. A patient who is going to improve responds in a definite manner: (*a*) His respiratory rate adjusts itself almost immediately to that of the machine. (*b*) Cyanosis and dyspnœa rapidly disappear. (*c*) Restlessness, due largely to violent respiratory efforts and the consequent embarrassment of a heart already labouring under difficulties, disappears. The rate of the pulse falls, its quality improves, and not infrequently the patient falls into a restful slumber. This sedative effect can be most striking. Cases which fail to respond in this way are unlikely to derive benefit from the respirator. Such cases are usually those in whom broncho-pneumonia has appeared.

8. The equable and slightly raised temperature which was maintained inside the respirator by the heating lamp appeared to have a beneficial effect upon the circulatory collapse which occurs in this stage of the disease.

Of the five cases which recovered, four would certainly have died without the assistance of the respirator. Of the three deaths, two had evidence of commencing broncho-pneumonia before entering the respirator. In both the respiratory rate of the patient failed to adjust itself to that of the machine; in consequence no relief was provided. One was in for four hours only, the other for five hours. In the third case the respiratory distress was relieved, but death appeared to be due to circulatory failure of bulbar origin.

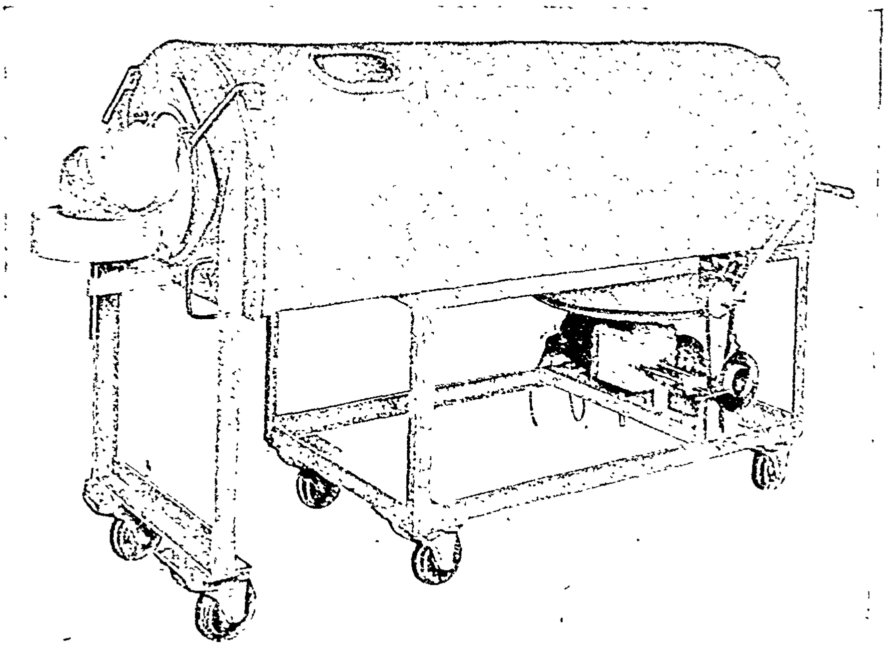
IN EMPYEMA

We have been unable to find any reference in the literature to the use of the Drinker respirator in empyema. The two cases here described suggest a new and valuable field for the use of the apparatus.

The first case was that of a child of 1¾ years, admitted for measles and broncho-pneumonia. A localised empyema in the right middle and outer pulmonary zone was treated by aspiration and later by rib resection. Progress was extremely slow, and 54 days after the operation the wound was still discharging. As the child was too young to be taught to inflate its lungs by respiration against resistance, it occurred to one of us (M. M.) that the respirator might be usefully employed to expand the lung by negative external pressure. The healthy side of the chest was strapped and the patient put in the respirator for one hour daily at pressures of 0 to −18 cm. of water. Four such treatments sufficed to expand the lung and the wound healed six days later. A later X ray showed only a narrow band of opacity to indicate the site of the former cavity.

The success which attended this experiment was so immediate and so striking that it was decided to try another case which was proving troublesome. This was not a simple case such as the one just described. Nothing definite was hoped for and, as it happened, a successful issue was not obtained, but definite improvement occurred.

This case, a female of 4 years, had previously suffered from asthma and several attacks of pneumonia. She was admitted for whooping-cough and pneumonia. Six weeks after admission she developed an interlobar



To illustrate the type of respirator used. The enamelled steel chamber encloses the whole of the patient except the head; a sorbo-rubber collar forms an air-tight junction at the neck. The variations in pressure are produced by the electrically-driven bellows, which can be seen at the foot of the apparatus above the motor.

(From a block lent by the manufacturers, Messrs. Siebe, Gorman and Co., Ltd., London.)

empyema which ruptured into a bronchus and infected the general pleural cavity. Despite a rib resection, progress was negligible; the wound continued to discharge and several X rays revealed an empty cavity in the mid-pulmonary field with collapse of the lung base. As all efforts at inflation failed to expand the lung, she was treated in the respirator on the same lines as Case 1. The discharge diminished at once and her general condition improved. An X ray showed that the basal collapse had disappeared and treatment was discontinued. The discharge immediately increased in amount, but diminished when treatment in the respirator was restarted. After seven days' treatment the discharge only amounted to an occasional head of pus, and an X ray showed evidence of permanent fibrotic changes in the lung. At the request of her parents she was discharged and allowed to attend an out-patient department.

We are of the opinion that this case derived definite benefit from the respirator. The beneficial effect was due to the fairly rapid disappearance of the pulmonary collapse. All the other abnormalities were unaffected by the apparatus.

We desire to acknowledge our indebtedness to Dr. W. Gunn, for placing his American experience of the apparatus at our disposal; and to Dr. E. H. R. Harries, medical superintendent of the hospital, for his valuable coöperation and encouragement, and for his permission to publish these cases.

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ADOLESCENT COXA VARA*

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THE slipping of the upper epiphysis of the femur is a well-recognised condition occurring in adolescents. The term coxa vara was introduced in 1894 by Hofmeister[1] and Kocher, but Sprengel,[2] in 1898, made the original observation that slight trauma was sufficient in certain individuals to produce this separation. In 1913 Elmslie[3] reviewed the subject of coxa vara, with special reference to the type seen in young adolescents.

The separation occurs only between the ages of ten and nineteen, the upper limit being determined by the union of the epiphyses with the diaphyses. The reason why it is not seen much before ten may be that the cartilages of the great trochanter and the head are continuous before this age, as observed by Irwin.[4] In 1915 Walmsley[5] pointed out that at ten the epiphyseal line comes to lie more vertically, with the result that the shearing force along the line of the growth cartilage is increased

The causation is not certain, but undoubtedly several factors are at work. Trauma is certainly one, but it is often slight, and often indirect (e.g., a twist of the leg); quite frequently no history of trauma can be recorded. Kocher considered a localised osteomalacia to be the cause, and Wardle[6] has described areas of apparent rarefaction in the metaphyses.

A large proportion of the patients show Fröhlich's syndrome, but it is possible that the increased weight is purely traumatic in its effect.

The seven cases considered in this paper are a personal series, and for that reason the numbers are unfortunately small. Two points may, however, be noted:—

(1) Whereas the boys are often of normal physique (with a history of trauma), the girls are apt to be obese (4 out of 5 *in this series*). They may weigh as much as 2 st. above the average for their age.

(2) A definite history of trauma was obtained in only 2 cases out of 7. In one of these there were premonitory symptoms—a common feature of the condition.

SYMPTOMS AND DIAGNOSIS

Adolescent coxa vara forms about 1 per cent. of orthopædic cases. It is notorious, however, that these cases are rarely diagnosed before admission to hospital, although in the early stages, before deformity has occurred, there should be no difficulty in their recognition.

Pain is usually the first symptom and may precede any others by weeks; it does not, as a rule, follow trauma. The pain is gradual in onset, is often described as rheumatic, and may be referred to the hip or knee. After a short time it becomes sufficiently severe to warrant medical attention and X ray examination. In the preliminary stage of this condition—as so often also in tuberculosis of the hip—radiography may be negative. There may, however, be slight areas of rarefaction visible on the diaphyseal side of the epiphyseal cartilage, and sometimes the profile of the upper border of the neck and head of the femur is convex upwards—that is, slipping has commenced.

As soon as pain is at all severe a limp will be noticed. Any child between the ages of 10 and 19 who complains of these symptoms should be radiographed and kept in bed for a week. All transient conditions, such as mild rheumatism, should clear up by this time, whereas more serious lesions, such as coxa vara, will show a return of symptoms if the child is allowed to bear weight again after this short interval. This condition should be suspected if the child is growing very fast or shows evidence of an endocrine disorder, such as marked adiposity or Fröhlich's syndrome.

Six weeks' rest, with slight extension, is the correct treatment at this stage. The condition is sometimes bilateral though usually not simultaneous. It does not affect the general health. After some weeks, and often as the result of moderate trauma, displacement occurs. If the onset is sudden there is extreme pain and inability to walk. In any case, an obvious limp will be noticed, partly due to shortening and partly to limitation of hip movement. Eversion of the foot is always present, and may be very conspicuous. The hip appears flattened, and some fullness over the front of the joint may be detected. Movements are limited except extension and adduction; abduction is very limited and internal rotation not allowed.

TREATMENT

Treatment of adolescent coxa vara by simple traction has been adopted by many surgeons, yet its efficacy and results do not seem to be widely known.

Until quite recently the orthodox treatment consisted in forcible reduction of the deformity by wide abduction of the affected hip under anæsthesia, and prolonged fixation in the corrected position by means of a double plaster spica. Most people will agree that the results were not very satisfactory; stiff joints and the subsequent development of severe arthritic changes were common, while the original deformity often remained unreduced. Subtrochanteric osteotomy of the deformed femur often gave good functional results, and this is still the method of choice where the deformity cannot be reduced. I propose to eal here with those cases in which deformity has not et occurred, or is reducible by simple skeletal raction.

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* Based on a paper read to the British Orthopædic Association on Nov. 3rd, 1934.

The X ray photograph of a typical case of adolescent oxa vara (Figs. 1–3) shows that the head has remained n its normal position in the acetabulum, while the eck of the femur (1) has risen an inch or so; 2) is adducted; and (3) is externally rotated as shown y the lesser trochanter being in profile.

The raw surface of the neck looks very much upwards nd forwards, and only to a slight extent inwards. aturally, Shenton's line is lost.

As the position of the head cannot be controlled eduction must be effected by changing the position f the neck. This was the principle of forcible reduction y abduction and internal rotation, but in that ethod the fulcrum about which the femur rotated was the point at which the lower edge of the neck impinged upon the head, thereby causing severe trauma to the atter, and possibly tearing of the lower part of the apsule as well. It is this fact which produced the bad results of this form of treatment. In 1929 Irwin[4] says:—

> "With two exceptions, out of a dozen cases which I have examined personally, the patients have suffered from pain, stiffness almost to the extent of complete ankylosis in some, and gross disability has always been present. One of the mobile cases was shown to me by H. P. Malcolm. It was unilateral, and was treated by extension for six months almost as one would treat a case of tuberculosis of the hip. A year later movements were still excellent."

Results of forcible abduction may have caused a swing of the pendulum in the opposite direction, and several surgeons who have adopted the recent method of skeletal traction have stated that the limb should not be abducted. If extension without abduction is applied, either the shortening only will be overcome, or the head will be forced back into relation with the neck by being caught between the lower lip of the acetabulum and the lower border of the neck. This would account for the slightly incomplete reduction shown in some of these cases, the end-result showing the upper border of the neck and head to be convex upwards. This appears to be the condition in the photographs of some of Wardle's[6] cases, and it is suspicious that he gives the standard of good result as "not more than ½ inch of real shortening." In the majority of his radiograms, however, it will be seen that during traction the femur is abducted. Perkins,[7] in his description of treatment, leaves the sound leg free so that traction on the affected side only causes abduction by the tilting of the pelvis.

In order to get apposition of the two fragments their raw surfaces must be brought into parallel planes, and this can only be done by abduction at the hip-joint; this is most accurately achieved by abducting the femur, during extension, to the requisite angle. When this manœuvre is employed, the fulcrum is not at the contiguous raw surfaces but at the attachment of the pubo-femoral ligament—as has been explained by R. Whitman in describing his method of reducing high cervical fractures of the femur. In addition, the tension of this ligament causes the femur to rotate internally, thus removing the third displacement—a fact which has often been observed without exciting adequate comment.

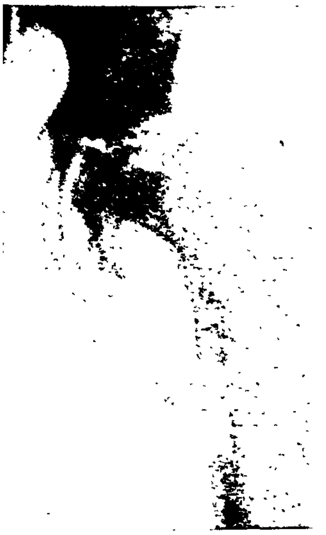

FIG. 1.—Typical adolescent coxa vara of the left hip in girl aged 11, showing complete separation of the epiphysis. Note the external rotation of the shaft of the femur.

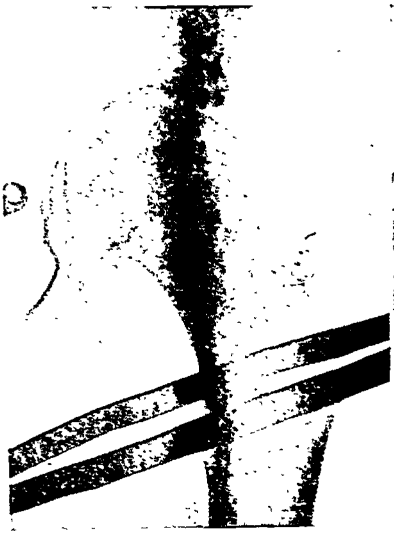

FIG. 2.—Radiogram of the same hip six months after reduction, showing complete reduction. Note upper line of neck and head, and the normal rotation of the shaft of the femur.

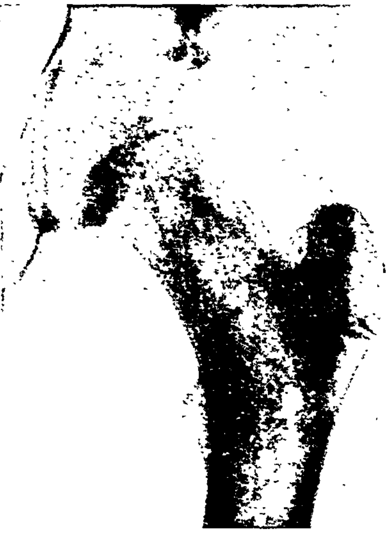

FIG. 3.—Normal hip of the same patient, the radiogram being reversed for comparison.

A SERIES OF CASES

The course of adolescent coxa vara may, as we have seen, be divided into three stages:—

1. Premonitory or pre-slipping.
2. Deformity present but reducible.
3. Deformity present and irreducible.

In the present series of 7 patients with 9 affected hips (2 were bilateral), 2 were boys and 5 girls; the age ranged between ten and sixteen years; none were examined in the first stage, though 3 called for medical advice then. Seven were in the second stage: 6 were treated by traction and reduction was effected; 1 was treated elsewhere by forcible abduction and plaster with a poor result. Two were in the third stage.

In all cases where the history of pain was six weeks or less, reduction was effected (see Table). The duration of the third-stage cases was 3 months and 9 months. Irwin[4] says that stabilisation appears to occur from six weeks to three months after displacement.

Table showing Results in the Treatment of Adolescent Coxa Vara

No.	Hip.	Age.	Sex obesity.	Length of history.	Weight extension 7 weeks.	Result.
1	L.	10	F. + +	6 weeks.	10 lb.	Complete reduction.
2	L.	16	M. –	9 months.	25 lb.	No reduction.
3	R.	13	F. +	?	?	Complete reduction.
	L.	,,	,,	6 weeks.	20 lb.	
4	L.	12	F. +	Acute onset.	None.	Very poor reduction.
	R.	13	,,	1 week.	15 lb.	Complete reduction.
5	L.	11	F. +	3 weeks acute.	15 lb.	,,
6	R.	14	M. —	?	20 lb.	,,
7	L.	11	F. +	3 months.	None.	No reduction.

The skeletal traction was obtained in the earlier cases with a Steinmann's pin, and later with Kirschner wire through the lower end of the femur, the limbs being supported in Thomas splints, each in about 30° abduction. Traction on the affected side varied from 10 to 20 lb., with counter-extension by raising the foot of the bed. The deformity having been corrected, the weight was gradually reduced after four weeks but traction was continued for seven weeks, the process being controlled by radiography. After the limb had lain loose to allow active movement, a weight-bearing calliper was worn for six months and gradually left off; during this period reduction of obesity was attempted where necessary.

Clinical investigations were carried out in some cases, but in these no abnormality was found in the blood, urea, calcium, or phosphorus estimations. The plasma phosphates figure appears to have been low, but this may have been erroneous.

In all cases where complete reduction was obtained, full range of movement was eventually present, with the exception of internal rotation which was slightly limited in two cases. Restoration of full range of movement to the knee was often more difficult than to the hip.

In one case an X ray photograph taken two years after complete reduction shows a slight relapse, which had apparently occurred without symptoms. Radiograms taken six months after reduction had been normal.

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CLINICAL AND LABORATORY NOTES

FRACTURES OF THE CALCANEUS

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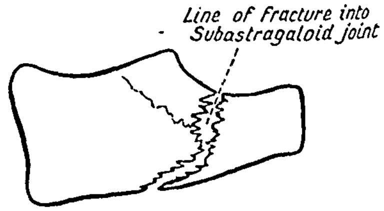
Since 1931, in fractures of the calcaneus involving the subastragaloid joint, I have concentrated on early movement of this joint; for only by keeping it free from adhesions can a painless foot be achieved. Normally, in walking, the shoe adapts itself to inequalities of the ground by movements at the subastragaloid and midtarsal joints. If the subastragaloid joint is limited by adhesions any slight inequality of the ground produces pain.

The fracture is caused by a fall from a height on to the heels. The body-weight, transmitted by the astragalus, fractures the calcaneus. The deformity which develops in a very severe fracture has been described by Böhler: the posterior fragment is pulled upwards by the tendo Achillis, flattening the posterior pillar of the longitudinal arch of the foot; the posterior fragment is also drawn forward by the short muscles of the sole of the foot, and the os calcis becomes broadened. Such displacements, if present, must be corrected by the special methods of Böhler, but as a rule they do not occur.

The treatment I adopt is as follows. The foot is encased in plaster applied over stockinette, the plaster being continued up the leg to just below the knee. A Sorbo rubber heel is fitted to the plaster and the patient is encouraged to walk about and to exercise his toes. At the end of three weeks the plaster is split down each side and the foot is taken out three times a week for movements of the subastragaloid joint. With the patient lying on a couch the astragalus is gripped by one hand of the masseur. The patient is encouraged to relax the muscles of his leg, and the masseur with his other hand inverts and everts the calcaneus. Movement at the subastragaloid is difficult to distinguish at first; for when it is absent the soft tissues over the calcaneus move and give a feeling of movement at the subastragaloid joint, which may deceive the inexperienced masseur. When the movement is really present, however, there is no doubt about it. During the period of split plaster no weight is taken on the plaster, and the patient moves with crutches. At the end of 8 to 12 weeks, depending on the size of the crack, normal weight-bearing is permitted.



The following notes summarise four cases treated by this method:—

Case 1.—On Oct. 31st, 1931, the patient fell 20 feet on to his heels, sustaining a bilateral fracture of the calcaneus. End result: moderate movement of the subastragaloid joint. Can walk only four miles, after which foot gets painful.

Case 2.—On August 10th, 1932, patient fell 10 feet off a ladder and fractured his calcaneus. Treatment was given and patient was walking eight weeks later. Two weeks later the subastragaloid movements were still poor and walking painful, and the foot was manipulated under an anæsthetic. Böhler's "redresseur" was used as a wrench to grip and move the calcaneus. A report on Nov. 29th, 1934, states that the foot is practically normal; patient can walk any distance, and gets slight pain only occasionally in changeable weather. Not affected by uneven ground.

Case 3.—On Nov. 19th, 1932, patient fell on to heels. Discharged twelve weeks later. Is now able to walk six miles without pain.

Case 4.—Fell 5 feet off ladder on Oct. 10th, 1934. Ten weeks later no subastragaloid movements present and walking extremely painful. Masseur changed. Two weeks later subastragaloid movements obtained. Three weeks later able to walk two miles free from pain.

Fractures of the calcaneus are comparatively rare, forming only 0·25 per cent. of the fractures I see in my clinic. Malpas[1] in 1927 reported that the end-result of 25 cases he had examined depended on the degree of movement of the subastragaloid joint: those with limited movement from fibrous adhesions were painful. In my small series I have aimed at preserving a full range of movement in this joint, and the result has been that all the patients have returned to the work in which they were previously engaged.

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[1] Brit. Med. Jour., 1927, i.

A CASE OF "BOTRYOMYCOSIS"

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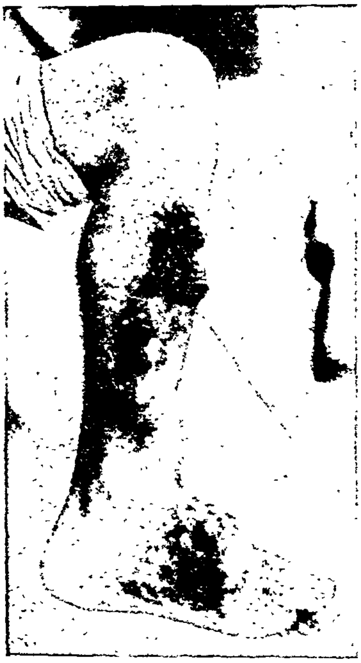
On March 25th, 1934, a male Persian, aged 18, of the coolie class, was admitted to the Isolation Hospital, Masjid-i-Suleiman, for observation. As the accompanying photograph shows, he had an extensive verrucose sessile nævoid tumour on the inner and anterior aspect of the left shin, and on the dorsum of the left foot. The tumour was not hairy and was darker than the unaffected skin of the leg; the hard verrucose granulations were situated on the summit of comparatively soft dome-like swellings which easily subsided on pressure with the fingers, but resumed their shape immediately the testing finger was withdrawn. The patient stated that the tumour had existed for "many years."

On admission the boy was thin and obviously undernourished, but otherwise normal. He had no pain but the tumour seemed tender, although he allowed the observer to incise the swelling on the foot and to remove sufficient for histological examination without much fuss. The incision bled profusely, and it was then discovered that the patient's apprehension had been on account of feared loss of blood, he having had experience of troublesome bleeding after slight injuries to his tumour.

Investigation.—(1) On applying Gram's stain the blood obtained from the tumour showed many pus cells, with intracellular and extracellular Gram-positive cocci in great profusion; there were also some diphtheroids. No acid-fast bacilli could be found. (2) Culture on glucose broth showed many streptococci of *viridans* type. On blood-agar many staphylococci and diphtheroids were grown; the latter, injected into a guinea-pig, were not virulent. A mixed staphylococcal and streptococcal vaccine was prepared. (3) A blood Wassermann test gave a positive reaction (nomenclature of League of Nations Health Committee). (4) The report on a section was as follows: "The basis structure seems to be a cavernous hæmangioma, with a very loose fibrous tissue framework. There is slight chronic inflammation in the deeper parts of the section; in the superficial layers there is well-marked chronic and acute inflammation, amounting to sepsis, and with hæmorrhagic effusions into tissue spaces. The inflammatory reaction is not characterised by any cellular or structural changes that throw any light on the ætiology of the condition." The typical botryomycotic bodies were not seen in sections stained with hæmatoxylin and eosin, by Weigert-Gram, or with toluidin blue.

Treatment.—The patient was watched until May 16th, 1934; his pulse and temperature were normal throughout, except on two occasions when he received injections of 0·45 g. N.A.B. (neoarsphenamine), each of which produced rather a severe reaction with a temperature of 101° F. Graduated doses of his vaccine produced no reaction. The lesions were painted daily with tincture of iodine. Mist. hydrarg. et pot. iod. three times a day for six weeks was administered. During the two months the patient was under observation his general health improved markedly, and he put on a stone in weight, but the tumour showed little or no alteration. It was then decided to give him an anæsthetic and scrape the growth away. On learning of this decision the patient discharged himself and has not been seen again. The N.A.B. was not pushed because the reaction after the second dose was worse than after the first. It is fairly clear that surgical removal of the tumour is the only treatment that would have been effective. The patient however seemed unwilling to lose the growth once his general health had improved; later it was discovered that the impressive appearance of the growth was a definite financial asset to him in his *profession* of beggar.



The growths on the leg and foot.

Castellani and Chalmers[1] consider botryomycosis to be a definite clinical entity. They say: "Sections show many young blood-vessels and vascular spaces which are surrounded by young connective tissue containing polymorphonuclear cells in which diplococci can easily be seen. In the very early stages the botryomycotic bodies cannot be seen. Later the growths are formed of dense fibrous tissue. The vascularity of some lesions is very marked, and Heuck considers that the condition is divisible into two categories, viz., the angiomatous and the simple. In the tropics the angiomatous is the common type." (They have, as illustration in their article, a good photomicrograph of a section which is almost identical with portions of the section examined here.)

MacLeod[2] states that "the name botryomycosis was originally applied by veterinary surgeons . . . from the belief that the lesion was due to an organism known at the time as a botryomyces . . . this view is no longer held and such lesions are now regarded as being of pyogenic origin."

In my opinion this case, which, clinically, was a typical botryomycosis at the time of observation, originated as a congenital verrucose nævus of the linear type, inclining to the ichthyosis hystrix variety, which later became infected superficially with staphylococci and streptococci, the outer layers of the lesion being thus converted into a granuloma pyogenicum.

I am indebted to Dr. E. Jamieson, chief medical officer, Anglo-Persian Oil Co., Ltd., for permission to publish this paper.

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[1] Castellani, A., and Chalmers, A. J.: Practice of Medicine in the Tropics (Byam and Archibald), London, 1921, vol. iii., p. 2390.

[2] MacLeod, J. M. H.: Diseases of the Skin, London, 1933, p. 346.

MEDICAL SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the fever hospital medical services group of this society on May 31st, with Dr. H. S. BANKS, the president, in the chair, a discussion on the

Incidence and Management of Scarlet Fever Otitis

was opened by Dr. MURDOCH MCGREGOR. He began by referring to the statement of E. L. Ross (1924) that 10 per cent. of deaf-mutes and 10 per cent. of all cases of chronic otitis media owe their condition to scarlet fever. This made it exceedingly important that adequate measures should be taken in fever hospitals for the prevention and treatment of the acute stage. The incidence of otitis media complicating scarlet fever had not, in general, declined materially since the war, despite the mildness of the disease and despite serum treatment—in so far as the serum was given intramuscularly. In considering the incidence in any series it was important to know the proportion of cases under five years of age, since by far the heaviest incidence fell on this age-group. At the Park Hospital, London, the incidence in a large number of cases of about normal age composition (25 per cent. under five years) and treated with serum intravenously was 1·9 per cent.—a really encouraging figure.

Otitis media did not always proceed to suppuration. Routine inspection of ear drums revealed a small proportion of low-grade inflammations which usually subsided slowly over several weeks. This condition must be supervised if the child was discharged from hospital before it subsided completely. At the Park Hospital the ear drums of all cases about to be discharged were now inspected. Bacteriological examination of the discharge taken direct from the tympanum with suitable precautions showed pure cultures of hæmolytic streptococci during the first week or two: thereafter secondary infection with skin organisms tended to occur, and the latter gradually replaced the hæmolytic streptococci in the more chronic cases. A rigidly aseptic meatal toilet was therefore advocated—e.g., sterile wool mops, frequent deep meatal mopping followed by hygroscopic (glycerin and spirit) drops, and lastly the application of ointment to protect the skin of meatus and pinna. Routine early paracentesis before the membrane ruptured was an impracticable ideal. Often the first sign of otitis media in children was a discharge from the ear. Routine examination of all ear drums at least once daily had been attempted for a short time—e.g., at Los Angeles—but the labour and expense involved were beyond reason, although results were good.

For the cure of the discharging ear and prevention of chronicity Gardner (1922) and Harries and Gilhespy (1924) advocated early removal of adenoids, but Layton (1925) from experience in London fever hospitals was unable to support this thesis. Dr. McGregor proceeded to describe results of treatment of a consecutive series of 152 cases of aural discharge following scarlet fever, under the general supervision of Mr. T. B. Layton at the Park Hospital. No operative treatment of tonsils and adenoids was performed. An otological record of every case was made during treatment and just before leaving hospital. Treatment consisted of the meatal toilet described above, combined in some cases with zinc ionisation. Prognosis was found to be influenced by three factors: age (the younger the child the worse the prognosis); the presence of intercurrent infectious disease; and the treatment of the acute stage of scarlet fever with intravenous serum. The results of treatment showed a marked improvement on Layton's (1925) published results, especially in the age-groups beyond five years. The powerful new factor in the improvement appeared to be the intravenous serum treatment of the fever itself. Almost perfect results were obtained where zinc ionisation was used in the serum-treated cases, and controls treated without serum were not so satisfactory. The explanation of this difference seemed to lie in the good general condition and rapid subsidence of the nasopharyngeal congestion in the serum-treated cases. Experience with otitis following measles, in which zinc ionisation had little effect, apparently confirmed this view.

The PRESIDENT reviewed the statistical basis of the work at the Park Hospital described by Dr. McGregor. The incidence of scarlatinal otitis media as late as 1933 in the whole of the L.C.C. acute fever hospitals (19,069 cases) was 8·0 per cent. In published series of cases treated with intramuscular serum it varied from 3·5 per cent. (Harries 1930) to 8·4 per cent. (Craig, 1928). On the other hand, the incidence in his Leicester cases treated with intravenous serum was 0·9 per cent., and in his London series (1933 and 1934) 1·9 per cent. The latter results were very similar when corrected for age-distribution, and they demonstrated the remarkable effect of intravenous serum in reducing the incidence of otitis media. As regards prognosis, the age-group 0–2 years was the worst, 51·4 per cent. failing to clear up in an average period of eight weeks, but none of these children had had intravenous serum. After 2 years of age there was a steep fall in the number of cases failing to clear up within eight weeks; the figure was 14 per cent. in the age-group 2–5 years, and only 2·8 per cent. in the age-group 5–15. The presence of intercurrent upper respiratory infections—e.g., nasal diphtheria, measles, whooping-cough, or tonsillitis—had a very bad effect on prognosis, 29 per cent. failing to clear up, as compared with 15 per cent. for simple scarlet fever. Further, the duration of the otorrhœa (in the successful cases) was almost doubled. The most striking factor in the prognosis was intravenous serum treatment, only 13 per cent. failing to clear up as compared with 28·2 per cent. in controls receiving no serum. With zinc ionisation in simple scarlet fever, 32 dry ears and 4 failures were obtained, as compared with 29 dry ears and 9 failures, where it was not employed. The worst combination was found in the cases treated without serum which contracted intercurrent respiratory infections. In this group even with zinc ionisation there were as many as 10 failures in 23 cases.

Mr. T. B. LAYTON said he wished to carry the discussion on to those cases which remained uncured at the end of the eight weeks. The first problem was to get these resistant ears dry, and thus prevent otological tragedies—such as sudden death from meningitis—in later life. The local treatment depended upon a principle, quoted by Lister in THE LANCET in 1867, that an inflammation tends to get well by itself if you remove the cause of the irritation. At this stage the products of the inflammation were responsible for keeping it going, and the removal of pus from the external auditory meatus was necessary to allow fresh pus to flow out from the middle ear. In other words improved education of the nursing profession was the most important factor in the treatment of ear disease. In addition movements of the pharyngeal wall had a marked effect upon the middle ear, probably by opening the Eustachian tube and allowing drainage down it. The child should therefore be encouraged to use its pharyngeal muscles by every possible means—in laughing, singing, and by means of physical drill and nose-blowing exercises. From the point of view of getting an ear well he would rather have a child crying than stolid. It was impossible to cure otitis media in the children with the immobile faces to be seen in the glass rooms of the isolation wards; they must be taken out of such rooms if the ear was to be cured. The other way in which the cause of irritation could be removed from the middle ear was by opening the mastoid and preventing the discharge there formed from flowing over the mucous membrane of the middle ear. He called this the "clearing-up" mastoid operation, and if there were a choice between removing tonsils and adenoids or doing such an operation he would certainly prefer opening of the mastoid. It took longer to perform, and required more preparation and after-care, but from the patient's point of view it was a far smaller operation. People generally seemed not to realise how severe an operation to a child might be that of removal of tonsils and adenoids, with its three large wounds open on the surface and considerable trauma to the underlying tissues.

The second problem concerned the cases which were clinically well but which had some residual deafness or hardness of hearing. This was an educational problem, and he thought that a duty rested upon the medical profession to inform the educationists at once as soon as there was some suspicion of its having arisen. Presumptive evidence of deafness came under three heads: (*a*) where the illness had been a very severe one; (*b*) where on otological examination considerable destruction of the drumhead was seen; and (*c*) where there had been some suspicion of deafness during the stay in hospital. In all cases where there was such presumptive evidence there should be a special examination shortly after leaving the fever hospital. In Mr. Layton's opinion there should be set up in every area a liaison between the medical authorities in charge of the infectious hospitals and the educational authorities whereby every such case arising under the former was reported to the latter.

Dr. E. H. R. **Harries** said that, in his opinion, otitis media was the complication least likely to be affected by injection of antitoxin. Reference had been made to the Birmingham 1921–22 series (published by himself and Gillespy in 1924) in which none of the cases were treated with scarlet fever antitoxin (not then available) and in which the incidence of otitis media had been considerably higher than in a series treated with intramuscular serum in 1930. In 1921–22, however, scarlet fever although already a mild disease was less mild than in 1930. In 1934 the disease was of trifling clinical severity, septic types of case being few and far between. Further, in 1921–22, early post-war years, nutrition was not satisfactory, and also the patients were mostly nursed in old, large and overcrowded wards. The bed-spacing of the 1930 series was much more favourable, whilst in a later (1934) London series, all treated with antitoxin intramuscularly, 12 ft. of wall space between bed-centres had been rigidly maintained. Dr. Harries stressed the vital importance of adequate bed-spacing not only in the elimination of droplet re-infection of the upper respiratory tract but in the prevention of hurried nursing by an overworked staff which resulted in manual transference of infection from the upper respiratory tract of one child to that of another. He thought that while the opinion originally expressed by the Dicks that scarlet fever antitoxin, by abolishing toxæmia, the better enabled the patient to withstand bacterial infection was probably true, he had at present no *proof* of its effect upon scarlet fever otitis.

Dr. A. T. W. **Powell** referred to the follow-up which had been in operation in Walthamstow for some years. Cases discharged from the isolation hospital were seen at a weekly out-patient clinic in order to control late complications and to assess fitness as to school attendance. Those cases of chronic otorrhœa which had not responded to treatment in hospital were referred to the next following weekly aural clinic in the clinical care of Dr. A. R. Friel, who was also consultant aurist to the isolation hospital. Such cases rarely failed to respond to ionisation treatment; but arrangements existed for the reference of cases of chronic otorrhœa and mastoiditis for operative treatment at two local general hospitals.

Dr. **Dunstan Brewer** (Swindon) said that in the provinces some of the troubles to which Mr. Layton had referred did not exist, for the health services were not discoördinated as they were in London. For some years he had aimed at not discharging from the isolation hospital any child still suffering from ear disease. For 16 years he had been able to succeed, though recently there had been some failures. He supported strongly the conservative treatment of scarlet fever otitis.

Dr. E. W. **Goodall** drew attention to the necessity for caution in drawing conclusions from sets of figures in which many variables appeared. Dr. Harries had spoken of the decline in the severity of scarlet fever during recent years. Otitis occurred most frequently in the severe cases, so that along with this decline there had also been a reduction in the incidence of otitis—as had been shown in a report published by the Medical Research Council six years ago in respect of the Eastern Hospital, Homerton. Of the principal complications of scarlet fever otitis had been the only one to show a decline. There was also a suggestion that severe cases and therefore otitis were commoner in epidemic times. All these facts had a bearing when one was considering the results of treatment.

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

A MEETING of this section on June 18th considered the relation to psychiatry of

Vocational Guidance

The subject was introduced by Dr. C. S. **Myers**, F.R.S., who gave an illustrated demonstration of the methods now being worked out by the National Institute of Industrial Psychology, of which he is principal. Vocational guidance, said Dr. Myers, like medicine, is an art employing scientific procedure and knowledge, but dependent also on the exercise of judgment, tact, and intuition. The vocational adviser has not only to assess, by psychological and medical methods mainly of measurement, the mental and physical abilities and disabilities of the applicant in their relation to possible occupations. He has also to determine, by less scientific methods, the applicant's temperamental and character qualities, his interests, &c.—for which no tests are at present available. Further, he must consider the applicant's social, economic, and family environment, his personal and family history, and the opportunities and prospects which an occupation, otherwise judged suitable, may at the moment offer. He must have knowledge not only of the conditions of entry, course and cost of training, nature of the work, pay, prospects and available vacancies in different occupations; but also of the mental and physical abilities and the qualities of temperament and character requisite for success in each occupation.

Dr. ANGUS MACRAE said that vocational guidance, considered in relation to mental health, is primarily a prophylactic service. Its aim is to prevent the strain which results from occupational maladjustment and which may be at least a partial cause of mental breakdown. Unlike psychiatry, it is a service for the normal individual. Nevertheless, it is important that the vocational adviser should be instructed in psychopathology and that he should have the coöperation of a practising psychiatrist.

There are, he said, many more or less normal adolescents whose vocational aims are influenced by unconscious strivings such as a person untrained in psychiatry might not understand. When, in such a case, the vocational aim is an unsuitable one, the adviser, if he understands the motivation of the choice, may be able to suggest an alternative career which, in addition to being appropriate in other ways, will provide the kind of satisfaction that the individual is seeking. Further, the vocational adviser, although he does not cater primarily for abnormal persons, sees a considerable number of maladjusted young people who might be wrongly advised if their characteristics, as shown at the vocational interview, were accepted at their face value. It is therefore important that the adviser, even if incompetent to diagnose the abnormality, should be able to observe that an abnormality exists, in order that the individual may receive psychiatric attention before a final vocational decision is attempted. Again, there are difficult cases of young people who, having been unhappy in their work, seek advice when contemplating a change of employment. In such cases the vocational maladjustment may be merely a symptom of an underlying emotional maladjustment, and there is a danger that the sympathetic adviser may encourage the individual to take to the path of the rolling-stone by recommending a change of work when what is required is psychiatric treatment.

It has been suggested, said Dr. Macrae, that the psychiatrist should be solely responsible for vocational guidance. It may be questioned, however, whether this plan is either practicable or desirable. Certain psycho-analytic writings suggest that, if conducted by psychiatrists of this school, vocational guidance would be based on a one-sided view of the individual and would yield distinctly unhappy results. But it is certainly true that the psychiatrist's contribution is one of great importance. How this contribution can best be made is a problem for the future. Possibly the solution is to be found in the extension of the child guidance movement. At present there is a growing tendency for vocational advice to be given by teacher-psychologists in the school; and there is also a growing tendency for psychiatric problems in the young to be investigated at child guidance clinics. There can be no doubt that, if the school adviser were more thoroughly trained in psychology, both normal and abnormal, and if there were closer coöperation between the school adviser and the clinic psychiatrist, the vocational advice given to the child would be greatly improved.

SECTIONS OF OTOLOGY AND LARYNGOLOGY

THE summer meeting of these sections was held at the University and the Royal Infirmary, Bristol, on June 14th and 15th. The chair was occupied by Mr. E. A. PETERS (otology) and Mr. W. M. MOLLISON (laryngology).

Mr. J. MORRIS, research engineer to an electrical company in Nottingham, read a paper entitled

Characteristics and Properties of Electrical Deaf Aids

He declared that telephone manufacturers were fully alive to the problem presented by the deaf and partially deaf person, and one company, the Erichsson, had devised a special amplifier with a volume control. An instrument with this object was at present under the consideration of the British post office authorities. None of the aids now in use were required to satisfy any particular standard, and they had not been standardised. There were three kinds of electrical aids: (1) individual aids, to be worn on the person; (2) semi-portable aids, needing to be conveyed in a case; and (3) group aids for use in such places as churches. He described the construction of each kind with the aid of photographs. The first kind of microphone, which had been finished with great care, had a useful "life" of no more than 14 days, for at the end of that time the crackling was unendurable. When a receiver was employed to reproduce speech over a vibration range of 125 to 3000 double waves per second, it should be the aim to arrange that it should not give a highly efficient response at any single frequency; there should be a maximum efficiency over a wide range of frequency. Considerable advances had recently been made in regard to microphone amplifiers, especially in instruments designed to aid bone conduction. The semi-portable aid was becoming increasingly popular. The third kind represented the ideal form for help in churches and other assemblies, their chief drawback being their high cost. It should be possible, the speaker thought, to devise, with the help of the National Physical Laboratory, a standard oscillograph test. Many forms of artificial ear had been devised, chiefly for the purpose of investigating the characteristics of telephone receivers and to make voltmeter tests, as the use of the human ear for this was irksome to the subject and apt to be inaccurate owing to fatigue. As to the prescribing of a form of aid for a deaf person, the pure-tone method left something to be desired, as in this the rectifying property possessed by the human ear was left out of consideration. Hence a second harmonic might be heard by the patient more distinctly than the fundamental note. The photoelectric talking machine had great possibilities.

In the ensuing discussion stress was laid on the need to protect the public from commercial travellers who were selling aids for the deaf. The point was raised that possibly the use of aids for special occasions might cause the hearing of a partially deaf person to deteriorate.

Mr. W. M. MOLLISON read a paper on the

Operative Treatment of Vertigo

He said that such diverse causes as wax in the ear and an acoustic nerve tumour could give rise to the syndrome consisting of deafness, tinnitus, and vertigo. Therefore the first step in treatment was to make sure that the external and middle ear, including the Eustachian tubes, were normal. A neurologist should be asked to eliminate any central nervous lesion, not forgetting the possibility of migraine. Toxic causes should be searched for in tonsils, teeth, sinuses, and other sources, and attention should be paid to the possibility of syphilis. After these researches had been made there remained a group of patients, usually over 40 years of age, who had unilateral deafness of high degree, with tinnitus and vertigo. The vertigo usually came on in attacks which might last a few hours or a few minutes, often accompanied by vomiting and nausea, and hence this condition entailed great curtailment of normal activity. Mr. Mollison did not think it was always true, as sometimes stated, that vertigo ceased when the affected ear became quite deaf.

The most effective medical treatment to prevent these attacks was to give luminal orally, the dose being gr. ¼ once, twice, or even thrice a day. If the patient showed undue susceptibility to this drug, caffeine should be added. When drugs failed to relieve this crippling disability operation was justifiable. In his experience a simple procedure yielded good results. Fortunately one labyrinth only seemed responsible in most cases. Some years ago Mr. Sydney Scott had found that injection of absolute alcohol destroyed the labyrinth of the pigeon, and Mr. Mollison reasoned that the same substance might, if injected, destroy the function of the semicircular canals in man. He had therefore been injecting absolute alcohol through an opening in the external canal; 1 c.cm. of it was injected anteriorly in an endeavour to reach the vestibule. For from two to ten days thereafter the patient was very giddy, owing to the unbalanced action of the opposite labyrinth. In none of his cases had there been any sign of labyrinth infection. Twenty-eight of his 30 cases had been traced; 22 of them were cured of their vertigo, 3 were improved, while in 3 the vertigo was uninfluenced. He had carried out the same procedure in cases in which vertigo persisted after the radical mastoid operation. In these latter the old wound was reopened, and after thorough cleansing with ether, the external canal received the alcohol injection. To cover the hole in the canal, a temporal muscle flap was turned down into the cavity. Mr. Mollison only carried out this operation in cases of vertigo with deafness, and preferably in those whose deafness in the affected ear was of high degree, the opposite ear having good hearing. The procedure having no mortality, he argued that for these miserable patients it was fully justified. Among his guiding principles in selecting cases suitable for the operation were the exclusion of cases of middle-ear infection, especially mild Eustachian obstruction, and also of all cases of organic disease of the central nervous system, as well as those with otosclerosis, or with foci of infection.

Mr. W. THACKER-NEVILLE related the particulars of three cases in which he had employed the method just described. In the first no real giddiness remained, though the tinnitus was not improved, but in the other both vertigo and tinnitus were cured. The ages of his patients were 31, 40, and 55, the last was a woman.

Mr. SYDNEY SCOTT emphasised the necessity for accuracy in the injection, since during his pigeon experiments the bird died immediately when the alcohol was allowed to enter the vestibule. Alcohol spread and penetrated very quickly.

Mr. A. J. WRIGHT showed a case of aural vertigo in which he had injected alcohol through the oval window. The patient, a woman aged 52, had had left-sided tinnitus since she was 18. For five years she had had attacks of vertigo with vomiting, and once an epileptiform attack with loss of consciousness. On the left side she could hear conversation at 3 ft. distance. Under general anæsthesia he had injected 1 c.cm. of absolute alcohol by puncturing through the intact membrane and the footplate of the stapes. So far the procedure could be regarded as a success.

Mr. MUSGRAVE WOODMAN had been struck with the importance of Mr. Sydney Scott's work on the Eustachian tube; it was not sufficient to inflate that tube, one must be certain that air entered. In one case, a woman of 72 with giddiness to a distracting degree, who had refused any serious operation, he had punctured the drum. The small hole made remained open two months; for five years thereafter the patient was free of attacks of giddiness.

The PRESIDENT (Mr. Peters) was impressed by the method, particularly in cases in which the cochlea and the posterior semicircular canal were affected. It would be interesting to learn how far the alcohol penetrated.

A discussion took place on Saturday on two papers dealing with

Sinusitis and Infections of the Eyeball

Mr. E. R. CHAMBERS read the first paper, from the ophthalmological standpoint. He said that in many cases of eye trouble the nasal sinuses could be held responsible, though there might not be any obvious sinusitis. In dealing with these ocular infections, especially of the cornea, no time must be wasted, owing to the danger of the rapid supervention of visual defect. A few ocular conditions which did not respond to local treatment of the eye cleared up when the nasal infections had been dealt with. Conjunctivitis, chiefly affecting the lower lid, with little discharge but with itching and burning aggravated by bright light, dust, and wind, cleared up usually with simple ocular antiseptic treatment, but recurred as soon as that treatment was stopped. In some of those cases there arose a thickened velvety condition of the conjunctiva, and this was often due to nasal infection. Episcleritis, characterised by chronicity and recurrences, and often ascribed to rheumatism because of associated pains or neuritis, was usually the result of an endogenous sepsis, and generally a cure followed treatment of the sinuses or the elimination of the particular focus of infection. Any type of keratitis could be due to endogenous sepsis, but one kind was due more to sinus infection than to anything else; first only one eye was attacked and the condition remained localised for a time. Often the existence of the eye condition deflected attention from the prime cause, a septic focus possibly at a remote spot. In all such cases the sinuses should be investigated. Irido-cyclitis was due to a blood-borne infection, from sources outside the eye, and nasal sinus infection often played a large causal part in it. Retinal hæmorrhages and the presence of exudates were indications for investigating the sinuses. A suspicious happening was a sudden loss of central vision in young and apparently robust persons; these might disclose a small hæmorrhage at the centre of the retina, when in the speaker's view the cause was an endogenous infection often in the nasal sinuses or the teeth, the toxins of which had caused damage to the capillary wall followed by hæmorrhage. Finally Mr. Chambers spoke of a papillœdema of the optic nerve, in cases of which a swelling of 4 to 6 diopters might be present. With such marked swelling the suspicion of an intracranial condition might be entertained, but in this case it was unilateral, and there were no positive neurological findings. Often in these cases the sphenoidal sinus was implicated.

Mr. ERIC WATSON-WILLIAMS also emphasised the great importance of sinus examination in cases of failing sight, especially in young persons. The relationship could hardly be denied when the turning-point to recovery was treatment of the sinuses. The cases detailed illustrated three special points: the first was that often there was no manifest local evidence of infection. Patients whose noses were stuffed with polypi or were freely discharging pus, might be quite well in themselves with only local trouble. It was when local reaction was so slight as to attract no attention that toxic absorption seemed especially liable to occur, producing characteristic changes, ocular, nervous, or arthritic. In three of the five cases specially mentioned, rhinoscopy gave no result. The second point concerned the difficulty of excluding sinusitis on X ray evidence. In two of the five cases the report on the skiagrams was negative although sinusitis was discovered, and in two others the skiagraphic evidence was not borne out by the operative findings. The third point was the readiness with which the eye conditions yielded after the sinus disease had been dealt with, although the former had previously been intractable. Hence the reflection could not be avoided that early sinus treatment might have conserved the eyesight in many cases in which it had been damaged or lost.

The PRESIDENT (Mr. W. M. Mollison) said that there had not been presented to the meeting anything approaching mass statistics to show the frequency of the inter-relation between sinus and ocular disease. At Guy's Hospital the speaker had had many eye cases referred to his nose and throat department, but in a great number of them he had found nothing wrong with the sinuses, though every now and then he did find a diseased sinus. He asked why acute conjunctivitis was found in patients with antrum disease.

Mr. E. A. PETERS questioned the mode of extension in these cases, and referred to a case in which whenever the man blew his nose his lacrymal sac distended.

Mr. A. TWEEDIE referred to the importance of the degree of alkalinity of the culture medium when searching for organisms; sometimes no growth developed on a hyper-alkaline medium.

Mr. BROUGHTON BARNES spoke of a case in which, in a boy, the nasal swab bore *Staphylococcus aureus*; the boy died in six days of cavernous sinus thrombosis.

Mr. J. F. O'MALLEY said that the cases in which there could be no question of contiguity forced the conclusion that for the most part the relation of sinuses to ocular disability was one of a common endogenous infection. A circulating toxin tended to manifest itself at some time in the excretory organs; there might occur a glomerular nephritis, or a skin rash.

Mr. RITCHIE RODGER remarked on the frequency with which, in such cases as had been mentioned, the tonsils were at fault.

Dr. PAVY SMITH commented on the fact that the selected cases on which Mr. Watson-Williams's paper was based were all recent, and asked for a later report at a subsequent meeting, owing to the possibility of relapses.

Mr. JOHN PHILLIPSON spoke of the importance of making an exploratory suction puncture of the sinuses in all cases of discharging nose.

The session was concluded by a discussion on

Obstructions of the Trachea

Mr. LIONEL COLLEDGE, opening, said this subject showed great possibilities in the direction of errors of diagnosis and misdirected treatment. The causes of tracheal obstruction were divisible into extrinsic, compression of the trachea, and intrinsic, being diseases of the tracheal wall. In the former group were included mediastinal tumours, enlarged glands, and aneurysms, and, most important, goitres and cancers of the œsophagus. In benign goitre enough of the goitre should be removed to stop the pressure on the trachea. The real difficulty was the dyspnœa caused by malignant goitre, which was often accompanied by paralysis of the vocal cords and by œsophageal cancers. In malignant goitre cases, whether the cords were paralysed or not, no attempt should be made to perform tracheotomy. Crile's idea in such cases was to relieve the dyspnœa by a decompression operation, by division of the sterno-thyroid and sterno-hyoid muscles, thus allowing the tumour to expand outwards. As, however, these muscles were usually already invaded by the growth the suggestion was scarcely practicable. Sir Felix Semon long ago warned those doing tracheotomy for double abductor paralysis to be on their guard as they might encounter another obstruction lower down.

Diseases of the tracheal wall itself were rare; here might be encountered syphilis, tuberculosis, or new growths. Syphilis in the trachea, apart from that in the larynx, usually responded well to antisyphilitic measures, and the tendency to stenosis following such treatment in the larynx did not obtain in the trachea. Apart from tuberculous laryngitis, tuberculosis of the trachea was very rare, but one such condition he described in a man aged 56, who had pronounced tracheal stridor, with an immobile larynx. Below the cords, which were moving well, a grey swelling could be seen. Tracheotomy was done, but there was much granulation tissue, and the patient had difficulty in getting rid of the large plugs of material. No kind of medication seemed to give much relief. Accordingly the affected part of the trachea was removed, and it gave astonishing relief. Tuberculosis bacilli were easily demonstrated.

Primary tumours of the trachea were very rare. Mr. Colledge described a case in a waiter, aged 37, who had a tracheal carcinoma and was treated by endoscopic methods. The man breathed freely through the tube, and his voice was almost normal. He remained well for ten years, and was able to continue his work. Then he had a recurrence of the obstruction and drowned himself. In many of these cases the first diagnosis was asthma. He related cases in which the tumour was made to shrink by the repeated application of deep X rays.

Mr. F. C. ORMEROD related a number of instructive cases of tracheal obstruction, and concluded by showing skiagrams to illustrate the ingrowth of malignant tissue direct from the upper lobe of the lung through the wall of the trachea. Such a growth, he said, originated in a small upper lobe bronchus, and often reached the lumen of the trachea by direct infiltration before emerging from the main upper lobe bronchus.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT the last meeting of this society, held in Newcastle-upon-Tyne, Mr. WILLIAM HUNTER read a paper on the *treatment of the post-hæmorrhagic state*. He defined it as "that state which follows the rapid loss externally of a quantity of blood sufficient to give rise to symptoms and signs," and said his object had been to evolve a practical routine for early emergency treatment. Here the aim was to restore a normal efficient circulation and so get rid of the anoxæmia; the capillary walls must be brought back to their normal state and metabolism must be accelerated to restore the functions of the various organs of the body. The treatment adopted consisted in intravenous infusion of glucose-gum solution (at the rate of 30 to 40 minutes per pint) with intramuscular injection of insulin, allowing 1 unit of insulin for every 3·0 g. glucose; ephedrine hydrochloride in 1-grain doses was found most efficacious for raising the blood pressure. After this emergency treatment, blood transfusion employing the citrate method was advisable. Cardiac and circulatory stimulants were not found to be of great value.

Mr. HARVEY EVERS and Mr. FRANK STABLER reported two cases of *severe dysmenorrhœa associated with protein sensitivity*. In the first case dysmenorrhœa accompanied by giant urticaria was ushered in by vaccination. After carefully testing the cutaneous sensitivity to various protein products, it was found that the patient was sensitive to wheat. Exclusion of this from the diet cured the condition.

Dr. E. FARQUHAR MURRAY read a paper on *radium treatment for gynæcological conditions in the Newcastle Centre*. He traced the history of radium treatment in the gynæcological department from 1920, and said that since 1932 this treatment had been intensified and operation had been abandoned in cases of carcinoma of the cervix. The Stockholm technique had been employed, and the results were as follows:

1930	..	..	50 per cent.	alive after	4	years
1931	..	..	53 ,,	.. ,,	3	,,
1932	..	..	82 ,,	,, ,,	2	,,
1933	..	..	81 ,,	., ,,	1	,,

The results in women over fifty had been very good; the treatment of recurrences was discouraging. For some years radium had also been used for all cases of carcinoma of the body of the uterus, and the general improvement obtained had been favourable to continuance, several cases having passed a three-year period without trouble. Upper vaginal growths had followed the course of cervical lesions; lower vaginal growths gave disappointing results. Vulval growths did not seem to respond to radium treatment to any extent, and the tendency had been to excise them wherever possible and to use diathermy for those which were definitely inoperable.

REVIEWS AND NOTICES OF BOOKS

Method of Action of Radium and X Rays on Living Tissues

By HECTOR A. COLWELL, M.B., Ph.D., M.R.C.P., D.P.H., The Barnato Joel Laboratories, Middlesex Hospital. London: Humphrey Milford, Oxford University Press. 1935. Pp. 164. 15*s*.

IT is a pleasure to welcome in book form the essay which was awarded the Garton prize and gold medal of the British Empire Cancer Campaign, 1934. Dr. Colwell has assembled the experimental evidence accumulated by many workers over a long period, has added to it the results of his own experimental work, and has produced an authoritative account of the chemical and general effects of radiation on living tissues which is at the same time a work of reference and a stimulus to further study.

In an introductory chapter he recapitulates the accepted teaching on the chemical and physical structure of the cell as shown by micro-dissection, chemical analysis, or special staining methods. He then proceeds to show the proved effects of radiation on the cells whose structure he has described, beginning with changes in the viscosity of colloids, and the oxidation and reduction phenomena which may be related to metabolism in living cells. The texture of the argument is close, and to appreciate it fully a considerable knowledge of the chemistry of proteins and the interactions of enzymes both in normal processes and in autolysis are necessary; but the fact is made quite clear that doses of radiation within the limits of those used in therapy definitely affect the cell constituents both chemically and physically, and that the most important changes occur in the nuclear and cell membranes. Of particular interest are the references to the author's own work in collaboration with R. J. Gladstone on the effects of X rays on developing chick embryos and on rat liver. They were able to demonstrate the partial, or even complete, disappearance of the divisions between the cells, sometimes with the formation of a syncytium, and this gives histological support to the chemical evidence of a special action which is increased by the presence of certain elements, such as copper or silver in colloidal form.

Immunity reactions are subjects of controversy; many opinions are quoted of which the results are discordant, and no conclusions are reached. On the other hand, resistance to tumour growth as a result of the inoculation of fragments of irradiated tumour, as shown in the experiments of S. Russ, H. Chambers, and G. Scott, is accepted as an important observation. The suggestion is that a substance inhibiting tumour growth is obtained at a definite point in the autolysis of tumour cells. This reaction does not appear to be peculiar to the autolysis following irradiation, as it has also been produced by cutting off the blood-supply of Jensen rat sarcoma for a definite length of time, just enough to allow of the development of the transitory inhibitory substance without the more complete destruction of the cell which carries with it the release of a stimulating substance. It is pointed out that the very transitory and uncertain changes make it difficult to imagine that this resistance can be hoped for as a result of the irradiation of clinical tumours.

The action of radiations on malignant growths remains a subject of considerable difficulty, particularly when the treatment of human cancer is referred to. The confusion of terms and the different methods of calculating dosage used by different workers make their observations difficult to collate. The gross changes are well known, and there is much of interest in the histological studies detailed, but they would be of greater value could we be certain that the tissues received a reasonably homogeneous radiation of measured intensity. Much stress is laid on the lethal dose as determined by the disappearance of tumours in vivo, or the amount of radiation necessary to prevent a tumour radiated in vitro from taking when inoculated into a fresh host. This is undoubtedly an important method of determining dosage, but it is to be hoped, in view of the discussions on the unit of dosage, that Dr. Colwell will at some future date summarise the effects of doses measured by physical methods.

The questions of wavelength and of relative sensibility are discussed, and the view of Russ and Scott that the relative radiosensitivity of skin and tumour tissue may be reversed by different wave-lengths is quoted as a valuable practical contribution. Throughout the book the practical aspect of the subject is emphasised, and the need for experimental radiology is made increasingly clear. There is an excellent bibliography, and the book is well printed in clear type.

A Manual of Diseases of the Eye

Seventh edition. By CHARLES H. MAY, M.D., and CLAUD WORTH, F.R.C.S. Eng. Extensively revised by MONTAGUE L. HINE, M.D. Lond., F.R.C.S. Eng., Surgeon to the Royal Westminster Ophthalmic Hospital. London: Baillière, Tindall and Cox. 1934. Pp. 505. *15s.*

THE revision of the text has been very efficient in this edition. Though there is a good deal of new matter concerning modern developments such as the orthoptic treatment of squint, and the operative treatment of detached retina, some of the chapters contained in recent editions, such as Mr. Devereux Marshall's chapter on colour vision and Mr. S. H. Browning's on vaccine treatment in ophthalmology, have been curtailed, so that the size of the volume has not been materially increased. In the chapter on detached retina there is a new coloured plate depicting a very evident tear in a large detachment. The student must not expect all his cases to be so easy to diagnose with the ophthalmoscope. The most modern methods of treatment by diathermy, according to the methods of Larsson and Safar, are referred to but a full description of them is beyond the scope of such a work as this. The illustrations, which have always been a feature of this work, now number 350, including those on 25 coloured plates. This in itself should commend the book to students.

Human Stupidity

A Short Introduction to the History of Human Stupidity. By WALTER P. PITKIN. London: George Allen and Unwin Ltd. 1935. Pp. 574. *12s. 6d.*

Mr. Pitkin has written an important and arresting book on Stupidity which, he maintains, is the fly in the ointment of our civilisation and has always been so. He has little respect for physical "toughness." "Those very powers of resistance," he says, "which pulled us through the bitter half million years contributed much to the dulness and general slow wit of the race. Yesterday's virtue has become to-day's evil." This is only one of many striking and challenging observations in this exhaustive, though never exhausting, book. "For half a million years the typical man at his best was a child's mind with a youth's outlook on life. Being on the whole poorly nourished, his behaviour approximated that of a poorly nourished adolescent." The causes of our stupidity are apparently legion, ranging from heredity to hookworm. It is stupidity which makes even the physically strongest of us submissive and so leads to war. "Not all the discoveries and inventions of mankind since the close of the Pleistocene age have benefited the race as extensively or as intensively as the war morons and war maniacs have harmed the race." The book ends on an optimistic note. Thanks to science, "for the first time in the career of mankind superior intelligence can wholly dispense with the aid of the dull and the otherwise inferior." Altogether this is a most entertaining book full of facts, figures, and daring—sometimes too daring—deductions. Though denunciatory in the extreme, Mr. Pitkin writes with kindliness and humour rather than with bitterness.

The Carbohydrates

Fifth edition. By E. F. ARMSTRONG, D.Sc., F.R.S.; and K. F. ARMSTRONG, M.A., B.Sc. London: Longmans Green and Co. 1934. Pp. 252. *15s.*

THAT highly respected work "The Simple Carbohydrates and the Glucosides" first appeared in 1910, but after the appearance of the fourth edition in 1924 *it* underwent binary fission into "The Glycosides" (1931) and the present volume. The latter provides a condensed and readable account of the important information available on an interesting group of the organic compounds. Just as some of the greatest music was produced under the rigid restrictions of the sonata form, so nature has produced some of her most useful substances by the arrangement of 6 carbon, 6 oxygen, and 12 hydrogen atoms whilst adhering to rigid rules of valency and some arbitrary configurations. The study of the simple sugars is not merely a study of permutations, solid geometry, and organic chemistry; most absorbing is the consideration of why only certain of the possible compounds have been selected to appear in the plant and animal world. The medical reader will be amazed at the rapid progress in our knowledge of the structure of the carbohydrates. Starting from the establishment of the molecular configuration of the two ring types of glucose it has been possible to develop with great accuracy and detail the actual configuration of the higher saccharides. The structure and spacial configuration of the disaccharides and oligosaccharides have now been worked out and even the higher polysaccharides are yielding their secrets. In this book a most difficult subject has been clearly presented and the references are accurate and remarkably complete.

British Journal of Children's Diseases

To the April–June issue (vol. xxxii.) Dr. E. Ashworth Underwood contributes the first part of a paper on the Neurological Complications of Varicella. He reports a case of his own and reviews 119 others which he has collected, together with 23 which are often quoted but which he discards. He adopts the classification of Berode and Miget, which consists of a group of prodromal symptoms, and six other groups—viz., meningo-encephalitis, encephalitis, myelitis, neuritis and polyneuritis, ocular manifestations, and "other conditions."—In continuation of his analysis of Over Four Thousand Cases of Educational Deafness, Mr. Macleod Yearsley deals with doubtful cases, of which there were 105 in his series, and deformities of the external ear, of which there were 22. He then discusses the prevention of congenital and acquired deafness. The causes of the acquired cases of which there were 2787 were as follows: diseases of the nervous system 382 (13·6 per cent.), infectious diseases 967 (34·7 per cent.), and primary ear diseases 1438 (51·5 per cent.). The principal infectious diseases responsible for deafness were scarlet fever, measles, and diphtheria in the order named.—In a paper on Cancrum Oris in Ancient Rome, Dr. W. J. Rutherfurd refers to the description of this condition by the poet Martial, and the various local remedies recommended by Celsus for faucial ulceration and cough in general. In a postscript the editor remarks that the diagnosis of cancrum oris in Martial's epigram—which has been made among others by Ménière and Raymond Crawfurd—is much more likely than that of tertiary syphilis which was suggested by Buret. The abstracts from current literature are devoted to acute infectious diseases.

THE LANCET

LONDON: SATURDAY, JUNE 22, 1935

A DIPLOMA IN ANÆSTHETICS

SINCE specialisation is a necessity of modern medicine, it is good that the public should be able to learn whose training and experience has made him an expert deserving recognition as such. The issue of special diplomas helps to make a rarer phenomenon of the sort of amateur specialist who is a danger to the public as well as an unfair competitor with the practitioner of all ranks. The arguments in favour of such diplomas are forcible, though many members of the medical profession feel that the institution of each new one implies yet another encroachment upon general practice. Of the two diplomas recently instituted by the English Royal Colleges, in child health (D.C.H.) and in anæsthetics (D.A.) it is the latter which is more likely to give rise to misgivings, since there are firms where one of the partners acts regularly as anæsthetist in circumstances arising out of the conduct of the practice, save where the nature of the case or the wishes of one of the parties concerned demands a specialist. It would be embarrassing to a surgeon in the habit of working with a particular anæsthetist to receive a suggestion that in the place of his usual coöperator in the district he should obtain the services of one whose ability is guaranteed by the new affix, but whom he may never have worked with. There are districts of considerable importance where practitioners have secured among their colleagues a sound reputation as anæsthetists. In fact the combination of general practice with specialisation in anæsthetics is a very usual one even in the large towns, and has advantages from every point of view. It would be calamitous, therefore, if the attitude were to be adopted that it is a dereliction from duty on the part of the practitioner or affection on the part of the relatives to summon anyone without a special diploma to give an anæsthetic. On the other hand, it often happens that a surgeon operating away from his usual neighbourhood has to take on trust the services of an anæsthetist whom he has never heard of; and it will be not only a great relief to him but a notable advance towards the reduction of operative risks to have spread throughout the land a number of practitioners on whom surgeons can rely with confidence for satisfactory service in anæsthetics. The particular diploma under consideration is not so constructed as to select only the super-anæsthetist. On the contrary the examination and credentials which qualify a candidate for the distinction are of such a kind that every competent anæsthetist of fairly wide experience should be able to pass the test imposed. This seems to us to be the right principle to follow in setting up a diploma in a subject where practice counts so much more than theory.

We publish elsewhere in this issue a list of ten well-known anæsthetists who have been awarded the diploma, without examination, under conditions detailed on p. 1479. In the future examinations will be held twice yearly, in May and November. The tests will be written and oral, and the subjects include history, theory, and practice of anæsthetics; pharmacology and elementary chemistry of anæsthetic drugs; and pre- and post-operative conditions relevant to anæsthesia. A candidate for entrance to the examination must either have held a resident appointment in a recognised general hospital for twelve months, of which at least six shall have been as resident anæsthetist, or else he must have administered anæsthetics in a hospital on not less than one thousand occasions, at least one-half of which shall have been for major surgical procedures. The above conditions may be modified, it is stated, for candidates who have carried out original investigations in the science or practice of anæsthetics or whose studies have been extended over a long period without fulfilling the exact conditions.

The D.A. is an interesting innovation, for it is the first of its kind in any land. It is fitting that it should originate in this country, for the English-speaking nations may legitimately claim to have led the world in all that pertains to general anæsthesia. In them almost exclusively is to be found a body of practitioners who devote their professional lives entirely to the administration and teaching of anæsthetics. The importance of this branch of work from the point of view of safeguarding human lives as well as from that of the assurance of the best possible results following surgical operations needs no demonstration, but it has been slow of recognition. Even in the land of SIMPSON, SNOW, HEWITT, and DUDLEY BUXTON, anæsthetists are only now beginning to get the consideration which their influence on the welfare of patients amply demands. In continental countries the recent formation of societies of anæsthetists, with associated official journals, shows that abroad also the Cinderella of medical specialties is beginning to reach a position equal to that of her elder sisters. The growing popularity of regional and local methods and of basal narcotics should mean not the curtailment of the general anæsthetist's activities, but the enlargement of his scope, and an increasing appreciation of the need for expert handling of the many new methods of making the patient insusceptible to pain impulses.

UNDULANT FEVER

UNDULANT fever is now recognised as an endemic disease in almost every country of the world. The primary reservoir of infection is in animals, and it is from animals that infection is transmitted, directly or indirectly, to man. In countries where goats and sheep are common, the main type of infecting organism is *Brucella melitensis*; in countries with a predominant cattle population the corresponding organism is *Br. abortus*; while the porcine *abortus* type, sometimes referred to as

Br. suis, seems to be confined almost entirely to the large hog-raising districts in the middle-western states of North America. During the past few years several reports have been published assessing the probable incidence of undulant fever in different countries. The difficulties of obtaining accurate information on this point are very great, partly because undulant fever is not generally a notifiable disease, partly because active infections with brucella are often atypical, and partly because an exact diagnosis can be made only on bacteriological grounds. In this country, where the disease is not notifiable and bacteriological examination of pyrexial cases is not undertaken as a routine, the number of collected cases must obviously be inferior to the real number. In countries such as Denmark, on the other hand, where the blood of pyrexial cases from all over the land is sent in to one central laboratory at Copenhagen, a much more accurate assessment can be made of the real number of active brucella infections. Dr. GUNNAR OLIN, who has just produced an extraordinarily valuable monograph on undulant fever in Sweden,[1] gives the following figures for the annual incidence of this disease during the five-year period 1929–33: Germany 8·3, Sweden 18·4, and Denmark 150 per million of the population. The much higher figure for Denmark is partly due to the larger number of cattle and the wider distribution of contagious abortion, but is undoubtedly ascribable largely to the centralisation of laboratory control and the facilities afforded, even in country districts, for adequate bacteriological examination.

Bearing these points in mind, it is interesting to consider the figures given in another part of our issue by Dr. BEATTIE, Dr. SMITH, and Prof. TULLOCH for the incidence of undulant fever in Scotland. By private investigation, and through information supplied by the Scottish Department of Health, they have been able to collect records of 97 cases of undulant fever occurring since 1930—an average incidence of some 20 cases a year. For reasons similar to those just discussed, it is certain that this incidence underestimates the true incidence of the disease. It is noteworthy, for example, that the collected cases occurred around centres where bacteriological investigation of the disease was being carried out, and that the incidence among doctors and nurses was considerably greater than that justified by the ratio they bear to the total population. These findings are very similar to those in England and Wales in showing that the number of cases detected is in proportion to the frequency of bacteriological examination. Thus the apparent incidence is greater in towns than in country districts, because laboratory facilities are more readily available in urban areas, and it is greater in doctors than in other occupational classes, because doctors suffering from undiagnosed pyrexia insist on a proper diagnosis being made.

With regard to the route of infection, the Scottish investigators are again in agreement with the conclusions reached by numerous workers in other countries. Only 14 out of their 97 patients had any direct contact with infected animals, and it is these patients alone that are likely to have been infected through the skin. The remainder had probably been infected by consuming raw milk or cream. Though contagious abortion is known to be widely distributed among the cattle of Great Britain, and though it has been shown that about 30 per cent. of samples of raw milk retailed throughout the country contain living *abortus* bacilli, doubt is not infrequently cast on the milk-borne origin of undulant fever in man. It is asserted that, if milk was responsible for infection, there ought to be a much closer relationship than apparently exists between the per-caput consumption of milk and the frequency of undulant fever. To those who are ignorant of the complexities of epidemiological inquiry, this argument is undoubtedly attractive, but it requires little knowledge of the distribution of human and animal disease to realise that such arguments are often fallacious. It is known, for example, that the malarial parasite is borne by anopheles mosquitoes, but numerous surveys in different countries have failed to show a direct relationship between the prevalence of anopheles and the incidence of malaria. The carriage of malarial parasites by anopheles, or of *abortus* bacilli by milk, is merely one of the factors that finally determine whether a given person shall or shall not develop clinically evident disease. The size of the dose, the frequency of the dose, the time intervals between successive doses, the immunological state of the patient, his past experience with the infecting agent, physiological and hygienic conditions at the time—these and doubtless other factors probably all play a part in determining the outcome of an infection. What is far more important than the quantity of the milk is the quality of the milk consumed in relation to the incidence of the disease. On this point the available figures are very suggestive, showing that in towns where most or all of the milk is pasteurised undulant fever practically does not occur. The few cases that have been observed in London, for instance, where about 95 per cent. of the milk is pasteurised, have been traced to raw milk. Among the Scottish cases, it may be noted, there were four patients who consumed large quantities of raw milk for medical reasons. It is pointed out that when practitioners order a milk diet for their patients they should insist that the milk should be pasteurised or boiled.

Dr. BEATTIE and his collaborators are silent on the treatment of the disease. Considering the seriousness of undulant fever in the individual patient, it is time that an inquiry was set on foot to discover some useful form of treatment. Ordinary vaccine therapy has, on the whole, proved very unsatisfactory, nor have chemotherapeutic measures justified themselves. The use in the United States and in certain European countries of melitin or abortin has apparently met with a limited success, but very little exact information on the results is obtainable. In Italy intravenous vaccine inoculations are being advocated, the intention being to provoke a severe constitutional reaction similar to that in ordinary protein shock therapy. Fortunately the case-mortality of the disease does not usually exceed 3 or 4 per cent., and except in persons suffering at the same time from some other condition it is usually safe to give a favourable ultimate prognosis. This in itself is encouraging both to the patient and his relatives in a disease whose average duration is about three months.

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[1] Studien über das Undulantfieber in Schweden. By Gunnar Olin. Stockholm: Isaac Marcus Boktryckerei-Aktiebolag. 1935.

A CHILDREN'S IMMUNOLOGY CLINIC

At the Rome Hospital Congress, of which a brief account was given in our last issue (p. 1397), Dr. A. F. **Cooney** spoke of a change in the attitude of public health authorities with which the hospitals in their area would have to reckon. Hitherto, he said, the advice of the hospital had usually been sought for illness. Now local authorities are seeking its aid in the prevention and preventive treatment of disease. Dr. **Cooney** is secretary of the Irish Hospitals Commission and although he expressly stated that the views he was ventilating were his own it may be taken that the tendency is clearly to be seen at Dublin hospitals. Since he spoke a hospital in London has announced an excursion into preventive medicine, which has perhaps no parallel in England. On Thursday evenings and, if necessary, on Saturday mornings, an "immunology clinic" at the Hospital for Sick Children, Great Ormond-street, will undertake Schick, Dick, and Mantoux tests, skin tests applied in hay-fever and other allergic conditions, as well as active or passive immunisation against diphtheria, scarlet fever, and measles, and the treatment of diphtheria carriers. The departure will provide an opportunity to obtain experience now lacking in many different directions. The inclusion of vaccination against whooping-cough indicates, we hope, an attempt to find by controlled investigation on a large scale which, if any, of the several vaccines described in the literature is effective, and in what dosage. The position is different in regard to convalescent measles serum, for here the value is well recognised, it is the supply which is failing.

Seven years ago, acting on a suggestion from the Ministry of Health, the Ormond-street Hospital prepared this serum on a scale sufficient to supply a certain number of institutions and private practitioners. At the present time the supply is very limited and the hospital is urging practitioners to persuade adult patients who have had measles within the last few years to volunteer as donors, during the non-epidemic periods, and so avoid the rush which is bound to occur when measles again becomes epidemic. The efforts of the London Fever Hospital and the Oxford medical authorities, for example, are already securing a harvest by no means negligible, but it is probable that a campaign as energetic as the anti-diphtheria propaganda in New York, or the devoted work of those who have built up the magnificent blood-transfusion service in London, would discover in the community further supplies of convalescent measles serum, or the less efficient but useful "adult serum." But a vigorous campaign by some organisation such as the British Medical Association or the Society of Medical Officers of Health will be needed to achieve an adequate general supply of this life-saving material for ill or very young children. We note with pleasure that the B.M.A. Council is to ask the representative body of practitioners to urge on local authorities the establishment of adequate machinery for the collection and storage of convalescent serum. Is it too much to hope that the clinic may help to solve another problem ? D'**Arcy Hart**'s figures show that of every 100 city children aged 7 apparently non-tuberculous 30 are positive to the Mantoux test. What we urgently need to know is this—which group will show in later life the greatest incidence of disabling tuberculosis, the 30 positive or the 70 negative ? Then it may be possible to take precautions for the safeguarding of the more susceptible child.

ANNOTATIONS

HUMAN STUPIDITY

"Gegen Dummheit kämpfen die Götter selbst vergebens."

Is there a stupidity that shapes our ends ? Mr. Walter P. Pitkin thinks there is and has written a book, reviewed elsewhere in this issue, to prove it. This book is some 200,000 words long and is called, perhaps in irony, "A Short Introduction to the History of Human Stupidity." In it Mr. Pitkin attempts to sustain the novel thesis that civilisations and cultures are moulded not by those of outstanding ability but by the stupid who, it seems, are always in the majority. By stupidity we are to understand, among other things, "a lack of sensitivity," "a state of confusion and low velocity" (presumably mental), or "an inability to cut through to the heart of a situation or problem." Very few of us will be able to escape conviction on one or other of these counts. In the bad old prehistoric days, according to Mr. Pitkin, it was only the stupid, that is, the relatively insensitive, who were able to survive the rigors of life on this planet. Hence, he argues, our ancestors were the clods of humanity and we are the children of clods unto the nth generation, including, of course, Mr. Pitkin himself as, to do him justice, he would be the first to admit. Thus stupidity persists as the supreme social evil. In fact, to such depths of stupidity have we sunk that the tail wags the dog. However comparatively sensible some of us may be there is, apparently, a ten-to-one chance against even the most intelligent of us acting intelligently in any given set of circumstances. Mr. Pitkin has collected a formidable array of facts all, doubtless, authentic. But some of his deductions from these facts are not by any means acceptable to those with special knowledge. A mere doctor, for example, might agree that "the woman who frequented a beauty-parlour where she was rolled and pounded in an attempt to keep slender" was essentially stupid. He might be sorry to hear that she subsequently developed cancer of the hip. But if he accepted the deduction, as Mr. Pitkin appears to do, that the former folly caused the latter catastrophe, he would be proving Mr. Pitkin's main thesis of human stupidity rather than the causative relation suggested.

Many of Mr. Pitkin's denunciations of historic acts of stupidity are doubtless well-merited. It is, however, proverbially easy to be wise after the event more especially when one is in full possession of the facts and can see them with detachment and in retrospect. Nor is it always just to condemn an act as stupid having first removed it from its proper context in time and space. No doubt, for example, the *Titanic* disaster should not, and need not, have occurred but it is manifestly unfair to condemn the stupidity of the wireless operators for paying too little regard to ice-warnings when they were, in common with their superiors, bent on making a record trip. Nobody expects a big ship to sink on her maiden voyage. Are we to be called stupid if we fail to make sure that the spokes of our car-wheels are sound every time we drive it? A surfeit of caution may be just as ludicrous as the lack of it may be disastrous and probably few men, except perhaps postmen, think it worth while to insure their trousers against dog-bites.

Nevertheless Mr. Pitkin's book is a slashing indictment of human behaviour not to be lightly dismissed. No nation or calling seems to have escaped his whip except, perhaps, the profession of medicine. It is difficult to see why this invidious distinction should have been made unless it be that the author felt that the balance of stupidity lay with the patient rather than the doctor. Much of what he has to say rings uncomfortably true. In spite of all, he remains an optimist and a constructive one at that. Nothing, he thinks, will be accomplished by religion, nor by moral drill, nor, least of all, by laws. Science will save us. His prophecy of an Utopian world saved from stupidity by science makes cheerful reading and it is a tribute to his book that we recommend the average *laudator temporis acti* to stop and buy one.

VARIETIES OF TUBERCLE BACILLUS

In recent Annals (January–February, 1935) of the Pasteur Institute is presented an exhaustive study, illustrated with more than one hundred excellent photographs, of the morphological, cultural, physical, and pathogenic properties of the three main types of tubercle bacillus. Dr. K. Birkhaug was formerly associate professor of medical bacteriology at the University of Rochester school of medicine, and has for the past three years been a member of the Paris Institute. In each of the nine strains investigated, Dr. Birkhaug found on culture three different kinds of colony: "R" (rough), "S" (smooth) and "Ch" (chromogenic), using the Petroff nomenclature. By means of single-cell cultures he shows that each of these three dominant varieties of colony is interconvertible in vivo as well as in vitro and that none of them possesses invariable characteristics, whether physiological, biochemical, physical, or pathogenic. The "Ch" and "S" varieties of both avian and mammalian tubercle bacilli, however, differ essentially from the "R" variety in their "diphasic" development in liquid synthetic media containing glycerin; this is characterised by an initial diffuse growth throughout the medium, in the manner of *B. coli*, with a clarification of the liquid in the course of one week and the formation of a flat and creamy surface film—in striking contrast with the "R" variety, which presents a "monophasic" surface growth only. Similar differences exist in the pH curves in liquid media inoculated with the three varieties of colonies, the mammalian "S" and "Ch" varieties producing an acid reaction in the course of eight weeks, and the "R" variety a neutral or alkaline reaction. With the avian "S" and "Ch" varieties an alkaline reaction curve is produced, while the avian "R" variety acidifies the medium. The electrophoretic mobilities of the "S" and "Ch" varieties, both of avian and mammalian origin, are definitely slower and more uniform, irrespective of age of culture, than those of the "R" variety which are nearly twice as rapid and variable with the age of the culture. Differences also exist between the three varieties in agglutination by acid, in resistance to heat, disinfectants, dyes, light, age, and unfavourable nutritive conditions. But the chief interest lies in Dr. Birkhaug's conclusions on the pathogenicity of these varieties of bacilli. The "Ch" variety, irrespective of its origin, is avirulent for the laboratory animals. The avian "S" variety is exceedingly virulent for the hen and rabbit, while the "R" avian variety is relatively avirulent for these animals. The mammalian "S" variety is relatively virulent for the rabbit, guinea-pig, and hen, injected intravenously or intraperitoneally; with passage the virulence is rapidly lost. On the other hand, the mammalian "R" variety is dominantly virulent for the laboratory animals, producing progressive and generalised tuberculosis, the human "R" variety only in the rabbit, the bovine "R" variety both in the guinea-pig and the rabbit. The "R" variety of the Calmette-Guérin bacillus (B C G) is relatively avirulent for laboratory animals, unless excessively large doses (10–50 mg.) are injected, intravenously or intraperitoneally, when typical tubercles result showing a tendency to caseation and early absorption. The "S" variety of B C G has shown an initial relative virulence in the rabbit and guinea-pig in doses of 1–10 mg. of the first and second passage cultures. The same doses injected subcutaneously produce localised caseous spots which always heal by ulceration or calcification. This virulence of the "S" variety is manifest only with intravenous or intraperitoneal injection. Miliary tubercles are produced in the lungs, liver, spleen, and occasionally in the kidneys and joints. After two passages cultures of the "S" variety rapidly lost their initial virulence, and during 31 bi-weekly passages on artificial media the "S" variety remained constantly avirulent for laboratory animals. Whether or not the "R" and "S" varieties of the B C G will always remain relatively avirulent Dr. Birkhaug admits is beyond current prophecy.

THE NORMAL HAND

The hunt for the "normal" is pursued in diverse ways by many people, who find a common difficulty in providing a definition of the term. Since it is essentially a question of fixing arbitrary standards of limits of variation, and gathering within these limits a large number of individuals, it is not surprising that the results of different observers do not agree in every particular. Nor does it matter overmuch. A normality in this sense is only a record of the greater frequency of the character in question among the individuals investigated. Prof. F. Siegert has chosen his material very carefully in his "Atlas der Normalen Ossifikation der Menschlichen Hand."[1] He has eliminated pathological influences, has examined histories, and has taken into consideration height and weight with reference to age. He has, in fact, taken only the best in all these sub-classes, and has made from them a group which he claims, with apparent justice, to be worthy of the term "normal." If the physiological processes are here shown to go on within narrower limits than is commonly thought, this is because to be of any practical value a rule must be definite enough to allow of measurement of variations from it. Probably if similarly well-grouped observations are made in this country it will be found that there are certain points of difference, but this possibility does not lessen the value of the records which we owe to the author of this work. Thirty-six plates of photographs, covering 150 children of both sexes (contrasted), go with the book as illustration of the material. It provides a definite standard for which, whether or not it will be found to apply to us, Prof. Siegert deserves our appreciative thanks.

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[1] Leipzig: Georg Thieme. Pp. 36. M.16.

ANOTHER MEDICAL VICE-CHANCELLOR

THE appointment of Mr. H. L. Eason as vice-chancellor of the University of London brings a medical man again to this high office after a period of 11 years. The last medical vice-chancellor was Sir Holburt Waring, whose tenure was between 1922 and 1924. Mr. Eason will bring to his duties an enthusiasm which has survived a vast experience in the public service—academic, medical, and social. At Guy's he has filled for 15 years a dual rôle, being a member of the honorary staff as ophthalmic surgeon, and also medical superintendent of the hospital. He is a representative of the University of London on the General Medical Council and its junior treasurer, and a representative of the Ministry of Health on the General Nursing Council. He is a coöpted member of the hospitals and medical services committee of the L.C.C., a member of the council of the British Hospitals Association, and a member of the general council and economy committee of the King Edward's Hospital Fund for London. He is also a member of the governing body of the British Postgraduate Medical School and of its school council. These are only some of his present activities. It would be difficult to enumerate the diverse committees on which he has served in the past, and impossible to over-estimate the value of his judgment in expediting non-controversial business and of his acumen in defining crisply the important issues. Mr. Eason has represented the medical faculty on the senate of the University for a quarter of a century, and has been a regular attendant at its meetings except for the four years of his war service as consulting ophthalmic surgeon to the forces in the Mediterranean and Egypt. It is thus a trusted friend and a wise counsellor who has been elected, and it is pleasant to think that his term of office will coincide with the centenary of the foundation of the University in 1936 and with its installation in a permanent home.

MANUAL REMOVAL OF THE PLACENTA

FROM the opening of the department of obstetrics at the Johns Hopkins Hospital in 1896 to June, 1933, there were 186 cases in which manual removal of the placenta was performed following delivery of a viable child. C. H. Peckham [1] states in a statistical survey of these cases that the incidence of the operation worked out at 1 in 120 patients, which compares with 1 in 312 (B. C. Hirst, 1918), and 1 in 110 (H. Montag, 1926). Most of the patients who had to have their placentas removed manually were multiparæ, and the incidence was highest among those whose labour had been prolonged as a result of sluggish uterine contractions. Premature labour also appeared to conduce to an abnormally adherent placenta. In 67 of the patients there had been spontaneous delivery, manual removal of the placenta being the only manipulation. Of these as many as 32 (48 per cent.) developed a puerperal infection and 7 died. These figures are more depressing as regards infection even than those published by A. Bourne (1921) or H. Baumm (1921) each of whom found an incidence of sepsis to be about 35 per cent. Peckham notes that manual removal has been less frequently performed at the Johns Hopkins during the later years of the period under review and ascribes this in part to a more real appreciation of the dangers attendant upon it. Of the indications for manual removal, hæmorrhage is the most obvious; mere retention of a placenta in utero, in the absence of hæmorrhage, should not be regarded as a condition demanding interference for at least two hours after delivery. By his emphasis on the danger associated with an intra-uterine manipulation which in itself may be a very simple one Peckham has shown once again the need of a searching inquiry into the factors that govern defective contractions of the uterine muscle.

JULES GONIN

THE announcement of the death at Lausanne of Prof. Jules Gonin at the early age of 64 is a reminder how recent is the modern treatment of detachment of the retina. Until 1930, when Gonin was invited to read a paper at the Oxford Ophthalmological Congress, his name was scarcely known in this country and his operation had only been performed by a few enterprising surgeons at Moorfields or elsewhere. Now his name is known to everyone, and although the particular technique that he advocated, and himself continued to practise, has been to a large extent superseded by newer and—according to the experience of most English operators—improved methods, his main contention, that the secret of successful treatment lies in sealing up the communication between the vitreous chamber and the subretinal space, remains unshaken. Gonin's operation or one or other of its modifications is now part of the ophthalmic surgeon's equipment, to the great benefit of most sufferers from the malady whose symptoms are at all recent. The results of treatment in retinal detachment of various types are to be discussed at the coming Oxford Congress in July. Gonin, although preferring his own technique, was by no means blind to the possibility of improvements; this comes out clearly enough in a monograph reviewed in these columns a few weeks ago (Jan. 19th, p. 154). There will be general regret that this congress must forgo his presence and the benefit of his ripe experience.

THE NEW WESTMINSTER HOSPITAL

ON Wednesday next, June 26th, the Prince of Wales will lay the foundation-stone of the new Westminster Hospital which is to be erected on two sites east and west of St. John's-gardens on the south side of Horseferry-road, not far from Lambeth Bridge. On the west side of the gardens will be the nurses' home and the medical school; on the east side the hospital proper. A beginning is to be made with the nurses' home which it is hoped to have ready for occupation next year, after which the building of the main hospital will be begun. The home is to accommodate 40 sisters, 200 nurses, 50 cooks, and maids; many of these will have had a say in its equipment, as for months past sample rooms have been on view at British Industries House where visitors have responded freely to the invitation to make suggestions in the books provided. Besides the living rooms the home will include a training school with lecture rooms, a model ward with dummy figures for testing probationers, a sun-roof for recreation, and what is promised to be the best dance floor in Westminster. Last but not least there will be ample storage room so that boxes and trunks will be eliminated from the bedrooms. Messrs. Adams, Holden, and Pearson are the architects. For the work of superintending the rebuilding, which will go on for at least four years before the whole of the hospital and its activities can be transferred to the new site, the present secretary of the hospital, Mr. Charles M. Power, has been relieved of his other duties.

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[1] Bull. Johns Hopkins Hosp., April, 1935, p. 224.

CANCER OF GENITO-URINARY TRACT

THE treatment of malignant disease of the genito-urinary tract is dealt with in several papers in the *American Journal of Surgery*, and they form a symposium on the subject.[1] A. Hyman prefers the suprapubic to the cystoscopic approach when implanting radon seeds into bladder growths: his reasons are, first, that it is difficult to ascertain by cystoscopy the exact extent and character of the neoplasm; secondly, that the degree of infiltration of the bladder wall can be definitely determined only by a suprapubic approach; and thirdly, that accurate disposition of the radon seeds is best achieved by open operation. The most important detail in the actual insertion of the seeds is the use of many introducers, so that those first implanted may be left in situ until the others have been put in. This makes it possible to cover the whole field accurately, whereas if the needles are removed as soon as the seed is introduced one cannot be sure that radon is distributed over the whole area. Special precautions are taken to avoid implantation of detached fragments of growth; thus the bladder is washed out with 50 per cent. alcohol and the cystotomy wound is seared with an endotherm electrode before inserting the sutures. When the growths are widespread and the patient's general condition satisfactory enough to allow of a serious operation, total cystectomy with implantation of the ureters is recommended. Hyman prefers cutaneous ureterostomy to sigmoidal transplantation because it is a less severe operation and can be carried out at the same time as the cystectomy. Considering how appalling is the fate of the sufferer from extensive malignant disease of the bladder, his results must be considered extremely good. In 19 cases in which total cystectomy with cutaneous ureterostomy was performed there was an operation mortality of 21 per cent. Only 6 of the 15 survivors were operated on sufficiently long ago to provide significant evidence, but 5 of these were still alive after 5–8 years. Complementary to Hyman's paper is one in which B. S. Barringer gives notes of 36 patients with carcinoma of the bladder treated by cystoscopic application of radium who have been under observation for periods ranging from one to twenty years. Among them 27 were treated by cystoscopic application only while 5 had previously had suprapubic implantation, followed by recurrence; 2 were secondary to cervical carcinoma. The treatment carried no operative mortality, and in Barringer's opinion, provided the seeds are properly placed, there need be no danger of penetrating the bladder with a radon-bearing needle.

H. H. Young treats of the radical cure of cancer of the prostate by means of an extensive excision from the perineum. Since the technique of perineal prostatectomy is well known, the main interest lies in the results, and L. G. Lewis reports that of 50 patients who survived the operation 33 remained alive for five years or more, while 23 are still living without recurrence. The conclusion is drawn that all suspect prostates should be removed immediately, and if such good results can be got in the comparatively late stages of the disease, those to be expected with an early diagnosis should be still more gratifying. M. F. Campbell, writing on the surgical treatment of cancer of the penis, holds that when the growth is superficial—say, less than 2 cm. in diameter—and unassociated with metastases, a complete cure can be expected from irradiation alone. For larger growths, without involvement of the lymphatics, conservative amputation of the penis will be sufficient, but if the lymphatics are involved, a more extensive operation is needed. It should be remembered, however, that in at least half the cases in which the inguinal glands are felt to be enlarged, the enlargement is inflammatory and not due to the spread of malignant disease. F. Hinman, who describes the radical operation for teratoma of the testis, says that it was performed on 14 patients who gave no evidence of metastases, and 10 of them were still alive. At operation it was found that 7 of the 14 patients had involvement of the lymphatics, and 4 of these are alive fourteen years, four years, one year, and three months after operation.

Malignant disease of the kidney is reviewed by W. Walters and W. F. Braasch, and here again it is the result of operation that is chiefly of interest. Of 42 cases diagnosed as renal neoplasm at the Mayo Clinic in the past two years, 9 were regarded as inoperable, which suggests that about a quarter of growths of the kidney reach the surgeon too late. A more comprehensive study of post-operative results was made in 1933, when it was found that between the years 1901 and 1927, 256 renal growths had been treated by nephrectomy. Out of the 256 patients 110 lived five years or more after the operation; 22 lived ten years or more, 15 between fifteen and twenty years, and 5 more than twenty.

RELAPSING FEVER

THE importance of relapsing fever, both from an epidemiological and from an experimental point of view, is emphasised by Prof. Hindle's valuable digest of 168 recent publications on the subject.[1] The disease is one which has long disappeared from the British Isles, together with typhus, and since the late war it has steadily declined in Europe as a whole, though endemic foci still persist in Russia. On the other hand, an extensive and deadly epidemic of louse-borne relapsing fever has swept across equatorial Africa, starting from Upper Guinea about 1921. In the French Sudan and Nigeria the number of deaths caused during the first two years of this epidemic is estimated at 80,000 to 100,000; in north equatorial Africa, where it persisted until 1929, about 10 per cent. of the population died of the disease; and in Darfur one district alone had 10,000 dead out of 45,000. The infection was probably introduced from the Mediterranean region by Moroccan and Algerian soldiers, and the outbreak provides a striking example of the lethal potentialities of a disease which usually has a comparatively low mortality.

From time to time sporadic cases of what was evidently a tick-borne relapsing fever have been recorded from various parts of the southern United States, and recently it has been shown that in Texas *Ornithodorus turicata*, a tick found in caves and similar localities, is responsible for the transmission. As demonstrated by Nicolle and his colleagues in the case of North African relapsing fevers, wild rodents may harbour the infection, and as a general rule the spirochætes are maintained principally in this rodent population, though they are often capable of infecting other vertebrate hosts, including man. Study of the spread of relapsing fevers in many parts of the world shows that with few exceptions all varieties are transmitted either by lice, or by ticks belonging to the genus ornithodorus. The most notable exceptions are the occasional transmission of Spanish-African relapsing fever by a dog tick. *Rhipicephalus sanguineus*, and the possible rôle of *Dermacentor andersoni* in the spread of relapsing fever in British Columbia.. In addition, the bed-bug is found to be a more favourable host than was previously suspected, and in rare instances spirochætes may persist indefinitely in the hæmocele of bugs that have fed on infected blood; but epidemiological evidence does not support the view that they are of any importance in carrying the disease.

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[1] Amer. Jour. Surg., April, 1935, pp. 5–59.

[1] Hindle, E.: Trop. Dis. Bull., May, 1935, p. 309

The study of chemotherapeutic agents against spirochætal infections has been greatly facilitated by the use of animals infected with various strains of relapsing fever. The method of administration is shown to be of importance, for irregular doses of neoarsphenamine (N.A.B.) may merely prolong the apyretic period without appreciably alleviating symptoms. Exposure to ultra-violet rays, or raising the body temperature, are both found to increase the efficacy of salvarsan compounds very considerably, especially in their effects on residual brain infections. Further, an interesting new method of studying chemotherapy is introduced by the chemical analysis of the mineral content of the spirochætes before and after treatment with organic arsenical or gold preparations. The results of these analyses suggest that the chemotherapeutic agent unites directly with the spirochætes, and that changes in this adsorbed substance bring about the formation of an actual poison, which acts on the parasite; but the cure is completed by the immune substances of the host.

ACCLIMATISATION TO GREAT ALTITUDES

THE preparations now in progress for a fifth attempt to climb Mount Everest in the summer of 1936 lend a topical interest to two recent contributions to the physiology of great altitudes. Dr. Argyll Campbell[1] brings forward evidence suggesting that the limit of acclimatisation may be reached at an unexpectedly low height. He has previously shown that (in the conditions of the experiment) rabbits and mice appear to have greater powers of resistance to low oxygen pressure for prolonged periods than has man—i.e., that they are more capable of maintaining normal appetite, health, vigour, metabolism, and body-weight. In the present paper he examines the behaviour of these animals in an atmosphere of 10 per cent. of oxygen, corresponding to an altitude of 20,000 feet, and shows that even after attaining good acclimatisation at a pressure of 12 per cent. they could not be brought to withstand the strain of life at a pressure of 10 per cent. of oxygen. Campbell quotes the observations made on Mount Everest in 1933 by Raymond Greene in support of his laboratory findings, but in applying his results in practice it must be remembered that, as he himself has pointed out, there are great individual variations in the resistance of animals to low oxygen pressure; and that, as Greene has observed, many factors besides mere oxygen shortage may enter into the consideration of human deterioration. The practical lesson of Campbell's work is this: that Everest teams should spend the maximum available time in acclimatisation below the North Col and the minimum possible time on the upper part of the mountain, and that the decision of the 1933 expedition to take oxygen in spite of much opposition to its use was a wise precaution.

A paper by Childs, Hamlin, and Yandell Henderson[2] raises the question of the possible usefulness of carbon dioxide to climbers at great altitudes. Insufficiency of oxygen often produces a period of overbreathing so excessive that carbon dioxide is washed out of the blood and a period of apnœa follows. The second period may be terminated naturally by the reinforcement of the mounting carbon dioxide by oxygen deficiency, or artificially by the inhalation of carbon dioxide from a cylinder. Experiments conducted on Pike's Peak by Childs and Hamlin seem to show that the breathing of 2–5 per cent. of carbon dioxide during exercise may have some slight effect in lessening the strain of climbing upon the heart and respiratory apparatus. The results of the experiments were not sufficiently definite, however, for important conclusions to be drawn. Moreover, Cheyne-Stokes respiration proves no serious handicap to carefully acclimatised mountaineers on the greater mountains. The experiment is worthy of repetition at greater altitudes, but is unlikely to be of assistance to the Everest expedition of 1936.

A MEETING of the subscribers to the Stanley Melville Memorial Fund will be held at the British Institute of Radiology, 32, Welbeck-street, London, W.1, on Thursday, Oct. 17th, at 4 P.M., to consider and decide the form the Memorial should take and the method of its administration. Friends of the late Stanley Melville are requested to send contributions before the date of the meeting to the General Secretary at the British Institute of Radiology.

Dr. Paul Dudley White, of Boston, U.S.A., will deliver the St. Cyres lecture of the National Hospital for Diseases of the Heart on Wednesday, July 10th, at 5 P.M., at the house of the Royal Society of Medicine. He will speak on congestion without myocardial failure, and members of the medical profession are invited to attend.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—Dr. T. A. Ross, formerly medical director of the Cassel Hospital for Functional Nervous Disorders, will deliver the Morison lectures in the hall of the College (9, Queen-street, Edinburgh) at 5 P.M. on June 24th, 26th, and 28th. He will speak on the teaching of the neuroses to medical students.

INDUSTRIAL HEALTH EDUCATION SOCIETY.—A meeting of the Industrial Health Education Society was held at 29, Portman-square, W., when Lord Luke presided, and the Duke of Kent spoke warmly to the meeting in support of the work undertaken. He found in particular that health talks to unemployed workers and unemployed boys' training centres had given valuable information, and that altogether the assistance of the medical profession in giving information to industrial workers on the diseases to which they are liable was most valuable. Lord Horder, president of the society, pointed out that while the grosser forms of occupational diseases which were much in evidence 20 years ago did not form the subject of these discourses, the whole standard of health among workers had already risen.

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[1] Campbell, J. A.: Brit. Jour. Exper. Path., 1935, xvi., 39.

[2] Childs, S. B. Hamlin, H. Henderson, Y.: Nature. March 23, 1935.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LVII.—PROGNOSIS OF DIVERTICULITIS

DIVERTICULOSIS is the name given to the mere presence of diverticula in the colon, and it is only when inflammatory changes have supervened that the condition is termed diverticulitis. The diverticula are mostly situated in the sigmoid colon, and when inflammatory change occurs it does so almost invariably in this region, so that it is as a disease of the sigmoid colon that we shall discuss the condition here.

With the increase in the number of routine X ray examinations of the bowel, diverticula are discovered more and more frequently, and it is of importance in such cases to be able to foretell the likelihood or otherwise of the future development of inflammatory complications. When it is realised that some 10 per cent. of people over the age of 40 have diverticulosis of the colon, and that actual diverticulitis is comparatively rare, it becomes clear that the risk is not a great one; and even that risk can be minimised by dietary precautions and the avoidance both of constipation and of purges. H. K. Graham Hodgson (Brit. Med. Jour., 1931, i., 525) has pointed out that those cases in which the diverticula show in the X ray plate as having a translucent centre with an opaque periphery represent diverticula containing inspissated fæcal material round which the barium flows, and are the type most likely subsequently to become inflamed. Where diverticulosis of this type is found, it is essential to advise prophylactic measures in the form of a low residue diet, the avoidance of purgatives, and the exhibition of liquid paraffin both by the mouth and by the rectum, in order to avert the onset of diverticulitis.

TYPES OF DIVERTICULITIS

Cases of diverticulitis fall roughly into three categories distinguishable by their main symptoms as (1) the inflammatory, (2) the obstructive, and (3) the genito-urinary types, although it must be remembered that in all cases the lesion is of an inflammatory nature.

The *inflammatory* type is associated with a tumour in the left iliac fossa and with pyrexia, and its manifestations are similar to those of appendicitis only situated on the left side. Like appendicitis it is protean in type and extremely variable in gravity. In occasional cases the so-called "pistol-shot" perforation of a diverticulum, with resulting peritonitis may be the first manifestation, and in such a case—there being no time for the formation of protective adhesions—immediate operation is necessary, the prognosis depending directly on the time that has elapsed between the occurrence of the perforation and the institution of surgical measures to close it. The more usual condition, however, is the development of an elongated tender swelling in the left iliac fossa, associated with moderate pyrexia. The swelling varies greatly in size from the sausage-like tumour indicative of moderate pericolitis, to the large phlegmonous mass such as is not uncommonly found in relation to the appendix. In this type of diverticulitis medical treatment offers a good prognosis, but it must be persisted in until all tenderness and pyrexia have disappeared, and must be followed by careful prophylactic measures. If repeated attacks occur, which they frequently do, medical treatment is still the safest course, but if surgery is called for it must take the form of a colostomy, to be followed in suitable cases by excision when the acute condition has subsided. Some patients find themselves so free from symptoms after the first operation that they are willing to put up with the inconveniences of a permanent colostomy. Some cases, however, even when under treatment, develop to the formation of an abscess instead of undergoing retrogression, and in such the abscess must be drained. The important point is that on no account must radical surgery be attempted in the presence of acute inflammation, or fatal results are likely to follow.

The *obstructive* type of diverticulitis is frequently mistaken for carcinoma of the colon. Clinically it shows itself by gradually increasing constipation progressing to obstruction, associated with pain and tenderness in the left iliac fossa, pyrexia, and sometimes the presence of a tumour. The first essential in such a case is to relieve the obstruction by means of a colostomy, and if this is not unduly delayed it carries a minimal risk. At the same time it is usually possible to form an estimate of the feasibility or otherwise of the subsequent removal of the portion of bowel affected. It is not unknown in such cases for the diverticulitis to be mistaken for carcinoma at the operation, and many instances of alleged survival for many years after simple colostomy for supposed carcinoma are examples of this mistake. When resection appears feasible it is important to allow adequate time after the colostomy for subsidence of inflammation, and this can be greatly helped by repeated low pressure lavage of the affected bowel. There can be no doubt that for the actual excision an operation of the Paul-Mikulicz type is the safest. The area of bowel is mobilised with the utmost gentleness and is brought outside the abdomen. The afferent and efferent loops are sewn together for 3 in., and the diseased part of the bowel is cut off with a diathermy knife. The continuity of the bowel is restored later by gradual crushing of the spur between the afferent and efferent loops, and finally the small opening which is left, together with the original colostomy, can be closed. This operation because of its many stages is irksome to the patient, but it more than compensates in safety for its other drawbacks. The temptation of inexperience is to perform a primary excision and suture, but in diverticulitis such an operation carries a very considerable mortality and is only to be undertaken in the most unusual circumstances of extreme localisation of the disease and free mobility of the bowel on either side of it.

The *genito-urinary* type is the uncommon variety of diverticulitis associated with a vesico-colic fistula. Here the severity of the resultant cystitis as a rule overshadows the bowel trouble. The condition is commonly diagnosed as a malignant one, whereas in fact diverticulitis is a commoner cause of vesico-colic fistula than is carcinoma. The prognosis in such cases is always grave, and unless the cystitis is speedily relieved renal infection and death frequently follow. A colostomy with spur formation, so that none of the intestinal contents reach the fistula, is the first essential, and when that has been done, careful washing out of the lower bowel segment will diminish the severity of the cystitis. At a subsequent operation the bowel is separated from the bladder and the opening into this organ pared and inverted. The treatment of the colon will vary. Occasionally excision and union over a tube is possible, but usually after excision the upper end of the lower segment must be closed, and the patient will have to pay the price of a permanent colostomy for relief from the symptoms and dangers of his fistula.

RELATION TO CARCINOMA

Much discussion has centred round the question of the liability of diverticulitis to become malignant, and were the existence of such a risk established it would be inadvisable to persist with medical treatment. There is, however, little doubt that the patient with diverticulitis is no more liable to the development of carcinoma than is any other person, and fear of its occurrence need not in any way influence treatment. It is true that many cases are diagnosed as diverticulitis which are in fact carcinoma and vice versa. It is also clear that carcinoma, considering its frequency, must and does occasionally arise in a colon the subject of diverticulosis; but clinical experience, and the work of E. S. Judd and L. W. Pollock on specimens, both point to the conclusion that diverticulitis is in no sense a precursor of carcinoma.

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SPECIAL ARTICLES

THE APPRAISEMENT OF HOOKWORM-KILLING DRUGS

BY CLAYTON LANE, M.D. Lond.
LIEUT.-COLONEL, INDIAN MEDICAL SERVICE (RETD.)

> "To ignore the past is to forfeit experience; to ignore the present is to make default to the future. . . . The new is not always true, nor is what is out of fashion always false."—(B. H. STREETER.)

To the query, "What drug best kills hookworms?" no reply can be given without first answering certain preliminary questions.

Should Deworming be Complete?

This question gets very different answers. In spite of emphatic disagreement, Garrison (1934)* maintained that cure meant complete deworming. Was he right? Or is there a worm-load proved to be negligible to host and to community? If so, how can it be determined? As to the host, Smillie and Augustine affirmed (December, 1925) that persons harbouring less than 100 necators need no treatment, but very shortly (January, 1926) they reduced this figure to 25. Neither conclusion emerges from their published facts (Lane, 1932), nor could the diagnostic means they used detect the lightly infected. No valid evidence has ever been produced of any such dividing line at any level.

For instance, Yenikomshian and Berberian (1932) retrieved 8 ancylostomes, with dramatic recovery of a gravely ill girl; and Ashford, Payne, and Payne (1933) retrieved 7 ancylostomes only from a markedly anæmic case, their accurate investigations yielding young worms 1·8 mm. long. If, as suggested, ancylostomes are twice as harmful as necators, grave illness could be caused by 14 necators, and if a dividing line exists between sick and carriers it must be much lower.

Pending the defining of such, the hosts' interest demands complete deworming.

As to the community, Molloy (1933) compared fæcal egg counts of 1455 persons before treatment, after one treatment with hexylresorcinol, and after two, and concluded that one treatment so lessened the hookworm load that it relieved most symptoms but did not eliminate all infective risk; accordingly a second seemed indicated, which might be by hexylresorcinol unless something better were preferred. The natural and apparently intended implication is that two treatments eliminate hygienic risk; but of the 618 persons who had two treatments with hexylresorcinol, over 500 remained infected; and taking a formed stool as averaging 100 g. this small group of presumably non-infective persons was actually passing at least 1,363,350,000 hookworm eggs *every day*. His paper was read at a joint session of the section of public health of the Southern Medical Society and the American Society of Tropical Medicine, and this unqualified advice passed without reported comment. To this hygienic position the policy of leaving a deliberate worm load has led. Such deliberate leaving in the individual of this or any other arbitrarily selected residual worm load is clearly opposed to the interests of both community and individual. Accordingly anthelminthic treatment should, as Garrison holds, aim at complete deworming. Whether it may rightly be pushed to this end is considered below.

Do Egg Counts Measure Worm Loads?

But while refusing to accept the conclusion just reached, some think that worm loads can be measured by fæcal egg counts. The evidence on the matter has been collected and arranged (Lane, 1932) with the conclusion that emphatically they cannot, either because corrections to the crude figures are necessary, or because they are actually being advised and used when they are not needed.

In the latter category lies consistence of stool. In the former lie age of worms, as Looss showed thirty years ago; their species, since *A. duodenale* perhaps lays eggs twice as quickly as *N. americanus*; interference by anthelminthics with oviposition, which caused Maplestone and Mukerji (1933) to reject egg counts in estimating the decrease in worm loads so produced in their hospital cases; weight of infection, as was first pointed out by Hill (1925)†; the presence of a second helminthic infection, which as Chandler (1932) showed may in the rat reduce to one-tenth the egg output of an existing one, peremptory disregard of a like happening in man being inadmissible; and diet, Foster and Cort (1932) reporting that in the dog it altered the egg count 1000 per cent., Looss having reported an opposite effect for man twenty years earlier.

Accumulating evidence does then but add strength to my conclusions (1932), "It is not possible from egg counts, however exactly made, to deduce with any approach to accuracy the number of worms which a person harbours." It was by inferring worm loads from egg counts that Smillie and Augustine based their conclusions above noted. Yet in discussing Molloy's paper (1933), Cort stated that egg counting was the only method usable under field conditions with groups of any size to test the reduction in worm burden produced by treatment. That is not so. Thus in commenting on Sweet's (1929) great work on 32,507 fæcal examinations in Ceylon, I have noted (1932) that with regard to hookworm infection the eight provinces with a single exception lay in the same order whether this was discovered by the tedious process of egg counting, or by the old and quicker one of noting the percentage of positives which one and the same diagnostic technique displayed. Which alternative is nearer reality? In fact, reduction of infectivity produced by massive treatment may be graded easily and rapidly by the growing number of negatives to a dependable diagnostic technique. Egg counts do not measure worm loads, and there are simpler, cheaper, and quicker ways of estimating hygienic risk.

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* At the section of public health of the twenty-seventh annual meeting of the Southern Medical Association of the U.S.A.

† It is pleasant to make a correction here. Having overlooked Hill's conclusion to this effect, and having read Sarles subsequent demonstration (1929) of this fact in dogs, I turned naturally to Hill's fully documented paper for confirmation, and independently worked out, and reported, the point from his tables. It was only on re-reading the paper months later that I realised that he had already made it in his conclusions.

Do Egg Counts Measure Fæcal Egg Content?

Different egg-counting techniques differ sharply in the number of eggs which they disclose from the same fæcal base, and they cannot all be right.

Dilution techniques disintegrate fæces in some liquid. Water was used by Lutz and Leichtenstern in 1885 to determine worm-egg ratios, and led Looss; in 1897, directly to his great discovery of the skin route for hookworm infection. Stoll (1923) used decinormal sodium hydroxide solution, but has never offered any evidence that it is better than water; it dissolves albumin and chitinoid, of which the egg and its shell are composed, and it readily produces clumping of a fæcal suspension with uneven distribution of its constituents. Independent reports have not established the method's claim to accuracy. In my own hands it has proved the most erratic dilution egg counting technique tested. Ahmann and Bristol (1933) found that in their's it gave consistent counts only after a training period covering 50 slides and even then only when an average was struck of four or more counts from the same suspension, a precaution perhaps never yet adopted. A half-saturated solution of common salt (Control E., Lane, 1924) with a specific gravity evidently near that of hookworm eggs, has given me evener and higher average counts than any other dilution technique, and merits independent tests. By means of rising air bubbles the dilution-floatation technique of the Caldwells (1926) mixes fæces with a sugar and antiformin solution having a specific gravity of near 1200. The known forces at work seem predominantly lifting ones. I have been unable to get satisfactorily even results with it.

D.C.F.F.[‡] (Lane, 1924, 1932) has given me the evenest and highest average counts of any technique, but to obtain them instructions must be carried out. Particularly fæces must be completely disintegrated, and concentration must not be too great.

In improvised apparatus Hung (1926) exceeded the limit of effective concentration and obtained poor results. Stoll and Hausheer (1926), and Hausheer, Herrick, and Pearse (1926), altered the technique by deliberate rejection of the advised disintegrator (which comparative egg-counting tests have shown to be the best), by picking off floating debris after centrifuging (that is to say after eggs have become forcibly concentrated and entangled in them in numbers) and not before centrifuging as was advised (because counts have shown that nothing of the kind occurs then), and by rejection of instructions to scatter an uncountable herd of eggs and to use a square field for counting. They altered the technique in essentials, they obtained counts, poor and some of them typical of undisintegrated fæces, they transferred the discredit to the original technique, and they failed to repeat the experiments or to issue any modification of opinion after these serious changes had been pointed out; their conclusions have had wide acceptance. Soper too (1926) reported badly on D.C.F.F., but his success in adding to egg collection by stirring the sediment between spins is clear evidence of failure to produce complete disintegration.

No tests have disturbed the evidence that D.C.F.F., properly carried out, is at present the most accurate egg-counting technique. It has been controlled as follows:—

The ovum content of a fæcal sample has been determined by D.C.F.F., a known quantity has been cultured, and the number of infective larvæ recovered by extraction and by trapping counted. Trapping is essential, for many, sometimes all, larvæ may migrate from a culture before it is extracted (Lane, 1928, 1932) and unless the trap is so situated as to intercept them at once, they may dry up before reaching it, so that the total number retrieved may form no check on the number of eggs in the culture. Indeed in infection with the related œsophagostomum of sheep, Veglia (1928) relied entirely on emigration in determining whether or not the sheep host was clean; moreover cultures must be extracted between about seven and ten days of being set, since after that interval larval numbers are apt to lessen, evidently by death. Of 149 cultures kept at 28° C., and trapped, and extracted within that time, 5 showed more larvæ than were accounted for by the eggs delivered by D.C.F.F., the percentage increases in order of time being 17, 5, 4, 1 and 0·1. The first factor concerned in this steady diminution was skill in recognising, by appearance and movement under a 2 in. objective, free-living larvæ among swarms of hookworm larvæ; the second was the evolution of a drying technique which freed the culture earth from free-living nematodes, none being found in the last 280 cultures set, some of which had stood for weeks.

The reasonable conclusion from these controls is that D.C.F.F., properly used, is the most accurate egg-counting method, that egg counts made by it measure egg content, and that it constitutes a safe means of determining what diagnostic technique is the best.

What Diagnostic Technique is the Best?

Smears will unquestionably disclose every infection if sufficient area of sufficiently dilute fæcal suspension is sufficiently carefully examined, and twenty years ago smears were being used with that very aim, but were so time-consuming that concentrative techniques came into being. But these diagnostic qualitative techniques vary more in accuracy than do egg-counting quantitative ones. They can be accurately evaluated by egg counts only; and it is through D.C.F.F. that D.C.F. has been shown to be the best diagnostic technique at present available (Lane, 1932), and to be capable of disclosing a single normally ovipositing hookworm.

A normal female necator lays sufficient eggs daily to provide 28 to 45 of them in each gramme of fæces, a female *Ancylostoma duodenale* perhaps twice as many; D.C.F. uses 1 g. of fæces; in normal fæces it displays not less than 60 per cent. of them, so will disclose such a solitary female, a thing which no other technique can be depended on to do. Obviously one which uses 1/200 g. of fæces will miss such a necator infection some nine times out of ten. Further, Maplestone (1933) showed that short-lived infections with *A. braziliense* are readily acquired, D.C.F. displaying 3 to 4 eggs to a preparation, and expressed his belief that he would have missed these deliberately induced and closely watched-for infections had he used any other diagnostic technique. Eggs displayed by D.C.F. can with great ease be collected into a central herd, whose size or density may be used for grading egg numbers on a mass scale as satisfactorily as syphilitic infections are graded by the Wassermann reaction every day in laboratories all over the world. A combination of negative results with such an estimate of the size and density of the herd in positive cases will allow the effects of treatment to be *satisfactorily* checked, and since D.C.F. can be carried out at the rate of a quarter of a million examinations yearly by 4 men using a twelve-tube centrifuge, the matter is pre-eminently one of practical hygiene. When all these points have been realised, the waste of time and money entailed by egg counts, made as measures of worm loads, is unlikely to continue in public health practice.

[‡] D.C.F. or direct centrifugal floatation is a qualitative (yes or no) diagı [illegible] examines a single specimen obtained by [illegible] D.C.F.F. or direct centrifugal floatat [illegible] is a quantitative technique, aiming at [illegible] ıumber of eggs present by examining [illegible] rom 4 (plus 1) centrifugings.

Conclusions as to Methods of Appraisement

The value of egg counts as a measure of worm loads is illusory, and as a measure of fæcal egg content depends on the method used; evidence for complete deworming is the only stable criterion of drug efficiency; fæcal worm search to determine this is tedious, unpleasant, and not always evidence of worm loads; though smears, adequately and laboriously used, presumably effect this, D.C.F. is the only concentrative technique which will rapidly and certainly detect every normally ovipositing fertile female hookworm (every infection of present hygienic risk), and it will do so at the rate of a quarter of a million examinations a year with one team of four men and one centrifuge; hygienic risk caused by infected persons can be graded rapidly, usefully, and empirically by estimating the size and density of the herd of eggs which that technique displays; and the lessening of hygienic risk produced by mass treatment is the proper and adequate measure of the success of such treatment.

What Drug Best Kills Hookworms?

When these conclusions are applied to hookworm-killing drugs, satisfying appraisement is found to be impossible, seeing that observations on different drugs have been made by methods too various to be comparable, and that for twenty years test by deworming has been neglected.

The problem has two parts—efficiency and safety. With no exception at all *safety must come first*, for the infection is in man and it rarely kills directly. Moreover, success and safety achieved in an institution need not be repeated among millions of infected persons in the field, nor can they be looked for unless the drug has a definite composition.

Oil of chenopodium has no such stability. When in greatest vogue its active principle, ascaridole, was still undetermined. This is deadly to man and worm, the respective lethal doses lie near one another, and its reported percentage in the oil has varied from 33 to 98. Further, the size of drops varies with different droppers, and there has been catastrophic confusion between 45 drops on the International Dropper (or 1·2 c.cm.) and 45 minims (or 3 c.cm.). Numerous deaths have followed the latter, apparently none the former, which at a percentage of 66 implies 0·8 c.cm. of ascaridole. To give the oil without knowledge of its ascaridole content is indefensible—but customary. Many tens of thousands of doses have been reported, in few has its ascaridole content been known, and in none of these has deworming been the method of measurement. In other words, I find no acceptable published evidence of its efficiency against hookworms.

The other drugs much used have definite chemical structures.

THYMOL

Thymol was in greatest use when prolonged examinations aimed at, and must often have succeeded in disclosing, deworming. For successful use it must be particulated. Thymol crystals readily set into a solid mass, so that when packed into a digestible capsule its shape may still be recognised in the now bare lump of wasted thymol passed in the fæces. Proper dispensing quite alters matters. B. E. Washburn and G. C. Payne showed in Trinidad nearly twenty years ago that when the drug was finely ground and then intimately mixed with at least an equal quantity of sugar of milk, deworming after two treatments increased from 12·6 per cent. to 49·1 per cent. Comparable results were reported from British Guiana and Ceylon. In all these cases post-treatment examination was so minute as to have been nearly or really accurate.

Giles (1890) held that particulation was best obtained by pouring an alcoholic solution into, say, eight times its volume of water and shaking.

The microscope then shows tiny globules of thymol-containing fluid moving about in the water. Their further behaviour varies. In a series of the writer's experiments at room temperature using a 50 per cent. solution in rectified spirit diluted and emulsified in this way, crystals began to form in two and a half to seven minutes on the surface of portions poured into open flat dishes, and in 30 minutes in those kept in closed flasks, the thymol-containing spirit having first collected into considerable globules on the surface. If Giles's observation on anthelminthic power was made on persons who received the drug as an emulsion, this presumably behaved in the stomach as in a closed flask, and absorption began from an alcoholic solution. But after forming, surface crystals are apt to grow rapidly into plates, far larger than the crystals of the drug as dispensed. Yet these crystals need not be allowed to form, for if initial shaking is so vigorous that the alcohol is rapidly diffused in the water, thymol forthwith precipitates out in fine, loose flocculi which do not afterwards aggregate into plates. The swallowing of the drug in a state of microscopic subdivision is, then, no guarantee that it remains so in the alimentary canal.

Several physical conditions may result when thymol solution is shaken up in water, and they are capable of influencing in several directions its absorption; for contrary to much teaching absorption should seemingly be one's aim. Thus Caius and Mhaskar (1919) showed that particulated thymol is completely absorbed, none being passed in fæces even when, with the drug, was given enough Epsom salts to produce purgation within 45 minutes. Two conclusions follow. Firstly, the fear that the taking of alcohol will, by its ready solvent action, produce too great absorption can hardly be correct. Secondly, since most of the absorbed thymol was not accounted for by the amount of its known derivatives in the urine, it must have been changed in the body into something else; quinine and emetine are so changed into active parasiticidal substances. Presumably (Lane, 1932) the actual vermicide after thymol is something else than thymol and is absorbed by hookworms from the blood, so that complete absorption should seemingly be our aim with thymol. Giles, a good observer, offered no figures in support of his view, and only extensive comparative tests can determine whether he was right, or alternatively to what degree of fineness crystals should be ground to give best results. On available evidence it may be concluded that two courses, each of 60 grains of "finely particulated" thymol, will effect deworming in about 50 per cent. of adults.

Moreover, such deworming is safe in those not already moribund or nearly so. I have reported (1932) all the deaths after thymol which I could collect. With but a single exception no two autopsies have shown the same lesions, the exception being two brothers who disappeared into the woods together for some two hours after a thymol administration and died of acute gastro-enteritis. It is not in accord with medical experience and usage to attribute to a drug lesions which have in all cases but one pair been different, and that pair having peculiar circumstances. Howard (1919) pointed out how persistently it was stated that sixty-grain adult doses of thymol were dangerous, but that there had actually been given over a million such doses in the United States with no death, and that few drugs could stand so severe a test. Last year I received a letter from the late Bailey K. Ashford in which he refers to 1,600,000 doses given by him in Porto Rico without a death, and towards the end of last year I had another from a young and distinguished lay American helminthologist reiterating the legendary risks from thymol, but when details in substantiation were urgently requested, he let the matter drop. I believe there is no evidence. If it can be found it should, in the interest of human life, at once be displayed. Actually thymol is as safe as it is because, like alcohol, it is apt to produce early symptoms of intoxication, and the intoxicating dose is far removed from that which kills. The figures I have quoted show how much justification there is for this strangely persistent legend, and I think that few who repeat it have any adequate experience of the drug's use. The figures were obtained by disinterested persons whose experience of thymol is unrivalled; my own 60,000 administrations without anxiety are relatively unimportant, for as Ashford, Payne, and Payne write, "We must remember Maurice Hall's wise observation that the limitations of an anthelminthic can hardly be known save after a hundred thousand well-observed administrations."

Beta naphthol.—The minimum lethal dose is 20 grains (1·3 g.) (Milne, 1933), and lower doses are not efficient.

CARBON TETRACHLORIDE

The following few instances have been found in which evidence of deworming has been used to measure the efficacy of carbon tetrachloride.

Field (1924) gave 4 c.cm. and, checking results by six smears and three examinations by a floatation technique, obtained a cure percentage of 77. Maplestone and Mukerji (1929) gave 3 c.cm. to sixty hospital patients, and using D.C.F. obtained a cure percentage of 48, while the same dose combined with 1 c.cm. of oil of chenopodium of unstated ascaridole content gave 46·4 per cent. of cures in 69 cases. The minimum lethal dose is 1·5 c.cm.

As to safety there are two sets of reports.

On the one side is Lambert's assured call (1933). "I report more than 100,000 consecutive treatments with carbon tetrachloride without a death"; but he does not there mention that earlier he had had 42,500 cases without a death, and then 3 deaths in the next 8000—deaths which he attributed to impurities, although the lesions found were reported by Darling (Lambert, 1923) as "unquestionably caused by carbon tetrachloride." Again, Tomb and Helmy (1933) report that in 1,600,000 doses they had 19 deaths, 6 being immediate in twenty minutes to six hours, and 13 delayed for two or three days with typical lesions. In the same number of doses reported for thymol by Ashford there were no deaths. What advantage justified the use of a drug which caused those 19 deaths? None is offered. Khalil (in Hassan and Salah, 1935) reports that 7 to 8 cases of "carbon tetrachloride poisoning" are reported yearly by the Parquet in Egypt. On the other side are reported high mortality-rates (*v.* Lane, 1932), of which only three examples need be repeated: Ziya Bey (Hussameddin, 1931) 1 death in 1200 administrations with an adult dose of 2 c.cm., Nag (1929) 3 deaths in 289 children, the dose being 2 c.cm. for a child of eleven, and Straub (1925) 2 deaths in 400 Chinese and Klings, the men receiving 2·5 and 3 c.cm., respectively.

The drug holds a unique position. It causes definite lesions. Its minimum lethal dose accompanied by typical lesions is 1·5 c.cm. (Bais, 1924), and the dose given in the British Pharmacopœia is up to 4 mils.

Tomb and Helmy (1933) hold that since after large doses most of the drug is passed unchanged in the fæces, large are safer than small ones; an unacceptable conclusion, for the quantity absorbed and not that remaining unabsorbed must govern safety, and Robbins (1929) showed that the larger the dose the greater the absorption, and therefore surely the greater likelihood of that hepatic and renal damage that kills. Moreover, hepatic damage is greatest round the hepatic vein, regeneration taking place from cells surviving beside the portal vein; but in autopsies recorded by Ashford and King (1907) on established deaths from ankylostomiasis itself (no carbon tetrachloride having been given) fatty degeneration was always present, and was most marked about the portal vein. Hookworm infection itself then, as they report, injures just those areas from which hepatic regeneration must start if life is not to be lost from carbon tetrachloride poisoning. Again, a factor making for death from the drug is excess of guanidine in the blood, the antagonism between guanidine and calcium has been repeatedly demonstrated, while Ashford (1933) notes from long experimental work with Hernandez that nutritional unbalance itself produces calcium deficiency, and that it is precisely among such persons that antihookworm work has usually to be undertaken. The dangers of comcomitant ascaris infection are real.

Further, Soper, of the Rockefeller Foundation, reports (1935) on the anxiety felt since 1932 regarding recrudescence of yellow fever in South America, where over 50,000 liver specimens were examined. In a large series collected in Ecuador pathologists disagreed on the significance of the lesions, immunity tests in children were negative, no cases occurred in the cities, and the clinical histories of the dead were inconclusive. But these last had one common factor—all but one of them had received anthelminthic treatment before dying. On the numbers of these deaths, the drug or drugs used and their dosage the paper is unfortunately silent (doubtless full details of these are being made public); but J. W. Lindsay, of Paraguay, tells me that the ordinary mass treatment of hookworm infection in that country (carbon tetrachloride or oil of chenopodium, or both, in standard doses according to age, by native orderlies not always under professional control) has in some districts, among the underfed, calcium deficient population, been followed in children by deaths, and in adolescents and adults by ruined health with swollen liver and yellow-ochre jaundice.

The position is this. The use of carbon tetrachloride is strongly pressed on backward races in doses considerably greater than the minimum lethal dose; its deadliness depends on an individual variability in the patient; some of the factors in this variability are known; and no attempt is being reported in its massive use to determine whether such as are known are all absent in the treated, and often none to ascertain whether these are infected or not. Is not this rightly termed "herd treatment"? Is herd treatment justifiable for man?

TETRACHLORETHYLENE

The following instances have been found in which tetrachlorethylene has been tested by evidence for deworming:—

In doses of 3 c.cm. it was given by Maplestone and Mukerji (1929) to 40 patients, with a cure-rate to D.C.F. of 15 per cent.; and at the same time they reported a like cure-rate of 26·2 per cent. in 42 cases when 1 c.cm. of oil of chenopodium of unstated ascaridole content was added to the same dose of tetrachlorethylene. They repeated the latter test (1933) using 4 c.cm. of tetrachlorethylene and 1 c.cm. of oil of chenopodium of unstated ascaridole content, and obtained by D.C.F. in 50 cases 62 per cent. of cures in one treatment, and 74 per cent. in two. What caused the marked difference in the results of their two experiments is not clear; several factors varied, but that the better results are those which may be expected in future cannot be accepted without further investigation.

These writers advise that this mixture should be shaken into an emulsion with 2 oz. of saturated solution of magnesium sulphate, so that it may reach all worms in the intestine in this state of subdivision, with efficiency thereby increased. This advice can hardly be sound, for as to the chenopodium Darling, Barber, and Hacker (1920) reported better results when it was given as an oil than an emulsion, and as to tetrachlorethylene, my own experience is that, within ten seconds of ceasing to shake up 4 c.cm. of tetrachlorethylene in 2 oz. of magnesium sulphate solution, the former has again begun to collect at the bottom of the flask, and that nearly all of it has so separated out in one minute. The chance of its reaching all the worms in the small intestine in a state of fine subdivision does not seem to be increased by the manipulation.

The dosage employed by Garrison (v. supra) for children of ten was 9 c.cm. in all, namely, 3 c.cm. weekly given on one morning in hourly doses of 1 c.cm. and followed by a purge, the child being kept in bed on the day of treatment. As to cure, a brine-floatation method showed 7 per cent. positive four months later. Garin, Rousset, and Gonthier (1933) gave 5 g. doses daily on three consecutive days, and obtained to a modified and unevaluated Telemann technique a cure-rate of 82·5 per cent. They compared it with thymol given in the same way in 3 g. doses, and which they held to be particulated by being finely ground and mixed with about a hundredth of the amount of magnesium carbonate necessary to produce particulation; its cure-rate to the same technique was 47 per cent. Their conclusions are not of comparative value, but are cited to emphasise how essential is attention to detail before fair comparisons can be made.

No death has been reported from tetrachlorethylene, though Kendrick (1929) had grave anxiety in one of 500 administrations after a dose of 3 c.cm. in a man weighing 100 lb. In a paper silent as to its anthelminthic effect, Lambert (1933) reports 46,000 treatments in the South Pacific without a death. Maplestone and Mukerji urge that, as was pointed out above for thymol, the symptoms may be compared with those of drunkenness. The drug merits massive, controlled, field investigations, but present claims to its pre-eminence are premature.

HEXYLRESORCINOL

No attempt has been traced at evaluation of hexylresorcinol through deworming. Molloy's cure-rate was clearly much less than the 19·4 per cent. claimed after two treatments as judged by Stoll's technique; for in 12 post-treatment cases this method disclosed to Maplestone and Mukerji (1929) four positives while D.C.F. displayed eleven. The drug has hitherto caused no deaths. Relative success depends on starvation, rigorous to a degree required for no other anthelminthic.

The many complaints of oral erosion when children bit the capsule induced, it is reported, its withdrawal by the makers from unrestricted purchase in the United States. In cats (Maplestone and Chopra, 1934) erosion of the gastric mucosa is histologically negligible in doses of 1 grain per kilogramme; but local action must depend on local concentration, and when this was produced by putting a big dose into a cat's small stomach there followed necrosis of the mucosa to half its depth. Similarly in a man with strongyloides infection it caused marked gastric irritation (without lessening of larval numbers passed in the fæces); accordingly these writers urge the need for careful selection of cases.

Encapsulation of the drug shifts to the invisible stomach the ugly necrosis it causes, but æsthetic gain need be no more than a decent shrouding of pathological damage. Hope of its usefulness on a mass scale is slight.

A COMPARATIVE TEST

Failing tests by deworming one must fall back on comparative tests in which control of single factors seems to have been attained. Only one such series has been discovered comprising three of the drugs. Caius and Mhaskar (1919, 1920, 1923), using the Schüffner-Vervoort method of trial and test drug with 60 grains of particulated thymol for the test treatment, got the following results with *A. duodenale* and *N. americanus*, respectively; particulated thymol 4 g. in one dose, 96·1 and 99·6; ascaridole 1 c.cm., 60·9 and 83·4; carbon tetrachloride, 1 c.cm., 11·5 and 90·8, 3 c.cm., 76·4 and 96·3.

General Conclusions

In my first section the conclusion was reached that deworming should be our clinical and hygienic aim, to which it is objected that to push a potentially lethal drug in an effort to attain this object, in an infection which itself rarely kills directly, is morally unjustifiable. But where is the evidence that thymol used with individual care is potentially lethal? Methods of drug appraisement have been summarised, with the conclusion that, from this point of view also, evidence for deworming should be their basis. Finally, the drugs have been so considered, and I have laid out all the evidence I have been able to find which fulfils the necessary conditions. It seems to leave thymol in the first place, especially when safety and efficiency are both considered, it being again stated emphatically that *safety must have the first place.*

It has been said that I have appeared as advocate in the case of thymol *v.* carbon tetrachloride, and have "perhaps unconsciously" weighted the evidence in favour of my client. Where human knowledge and human life are at stake, suggestions of such bias should be substantiated, but nothing of the kind has been attempted by that writer in the years that have since passed. Again, this conclusion of mine, based on published evidence (that properly administered thymol remains preferable to all the newer anthelminthics), has been designated as reactionary and prejudiced; but in this connexion it seems worthy of note that other conclusions of mine (dealing with the point reached by existing evidence on the mechanical basis of microfilarial periodicity) have been described as revolutionary. A sane person whose mind runs equally readily to revolution and reaction in kindred subjects must be somewhat of an oddity. Perhaps after all the appropriate adjective in both cases is rational.

The bulk of what has been offered as evidence for appraising hookworm-killing drugs has been reached in non-comparable ways. What is good I have attempted to sum up fairly. These conclusions are before a jury of medical men in private and public health practice, men fully competent to decide whether the evidence offered is or is not good. But in face of its meagreness the matter should not rest there. There is so much of human life and human happiness at stake that the immediate future should see a serious effort made, by unprejudiced and independent qualified medical workers, to add to acceptable and controlled evidence regarding the real value and safety of hookworm-killing drugs. If this paper does not initiate the collection of a sufficiency of such evidence by such men, it will have failed in its most important aim.

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ROYAL INSTITUTE OF PUBLIC HEALTH AND INSTITUTE OF HYGIENE

CONGRESS IN HARROGATE

A CONGRESS was held in Harrogate by the united Institutes commencing on Tuesday, June 4th, and concluding on Whitsun Sunday, June 9th. The congress met under the presidency of Lord Harewood, and its work was carried on under five sections: (1) State Medicine and Hygiene; (2) Women and Children and the Public Health; (3) Tuberculosis; (4) Rheumatism and Allied Diseases; and (5) Hydrology, Climatology, and Meteorology. The ground covered in the communications was extensive. These will be published, as far as possible in extenso, in various issues of the *Journal of State Medicine.* Certain of the debates which roused the principal interest in the different sections are here noted.

Dr. Johnstone Jervis, M.O.H. for Leeds, pointed to bad housing as still remaining the chief cause of tuberculosis. Dr. W. S. Gilmour, medical superintendent of the City of Leeds Sanatorium, said that tuberculosis accounted for about 50 per cent. of all the deaths in young women, and Dr. N. Tattersall pointed to the long hours of work in factories imposed upon girls who had only just left school. Compared with the strains of industrial life, he held the cocktail habit and other accompaniments of social life to count for little. Sir Pendrill Varrier-Jones said that despite all efforts tuberculosis succeeded in killing four or five times as many people as the motor-car. In his experience tuberculous people could do excellent work if given a chance to make good by employment. He asked whether it was not better to subsidise their industry than their enforced idleness when driven into the ranks of the unemployed.

Dr. L. P. Lockhart, member of the Industrial Health Research Board, introduced an interesting debate on the position of the sexes in modern society. The welfare of women, he thought, would never be properly advanced until their supposed lack of mechanical ability and their supposed instinct for cooking and textile work were found to be inaccurate generalisations. Women, he said, need freedom, not to do as they like, but to assume their full share of responsibilities in industrial and economic life. The challenge was taken up by several speakers who pointed out, among other things, that too many women were found in offices and factories who would be far more efficient in discharging household tasks; that if a married woman entered the labour market she could not do her work at home properly; that it was degrading to see women engaged in industries once the stronghold of men; that properly cooked food from a communal kitchen was better than ill-cooked food from the domestic oven; and that when women entered industry they were used as a lever to pull down men's wages.

A debate on the need for the greater standardisation of food products produced some straight talking. Dr. King Brown, instancing sausages as a valuable article of diet whose contents varied so enormously that standardisation was required, urged that the public should be protected from misleading advertisements. In illustration of this Dr. H. M. Holt said that the public ate under the heading of confectionery things sold as cream buns which had no cream. Dr. Jervis held that food standardisation, if it raised the prices by safeguarding the value of the product bought, would save much expense later on in medical and hospital treatment. Dr. G. E. Oates, M.O.H. Paddington, criticised the working of the Milk Marketing Board, and Major D. S. Rabagliati urged that the producer should be encouraged to go in for tubercle-free milk.

Dr. Doris Odlum spoke of the necessity that teachers should be better fitted for their work by taking a course of psychology, believing that the average mother would accept guidance in bringing up her children if the educational system provided teachers who had had some appropriate training. She criticised also the children's courts, the presiding magistrates not having proper psychological equipment.

SPA TREATMENT

Dr. Alfred Cox, general secretary of the British Health Resorts Association, opened a discussion on spa treatment for industrial workers, pointing out that in Great Britain no use was made of the opportunities for the relief of disease provided by spas, while in France and Germany no place could be recognised as a spa unless it was prepared to treat a certain number of cases free and a large number at reduced rates. Many industrial workers, he said, were suffering from diseases which spas could best deal with, but the advantages of the British spa are too often not available for them.

In this section of the congress Dr. Howard Humphris read a paper in which he suggested that the known beneficial qualities of spa treatment are not in this country sufficiently related to the radium emanation contained in the waters. He held that in radium emanation taken at the source of origin the main secret of spa benefits could be found. "The secret of the spas," he said, "is identical to radium emanation," and he pointed to the excellent results of mild radium therapy, so that it was unfortunate that British spas should labour under the disadvantage

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of not being able to supply mild radium therapy. The task of installing it in every spa could be accomplished with very little difficulty and expense by means of a specially constructed apparatus, the emanator, which he described.

An attractive handbook was published on the occasion of the congress, setting out the claims of Harrogate both as a medical centre and as a place of recreative sojourn. The compilers have realised that while the medicinal springs must be the main reason which attracts the public to the spa, the invalids are usually accompanied by relatives and friends, while both those who are sick and those who are whole require diversion. In this handbook Mr. S. P. B. Mais points out that Harrogate is the central point between London and Edinburgh, between John o' Groats and Land's End, and between the east and west coasts, and is a stepping-off place for those who wish to see England at its richest, historically, architecturally, and pictorially. Harrogate has received more than one description in these columns, and its scenic magnificence and efforts to provide amusement as well as "cures" are well known to most medical men. We may refer our readers to the account of a conference held there under the auspices of the British Health Resorts Association last year (THE LANCET, May 19th, 1934), as showing what advantages the spa can offer to the suitable patient.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY

ANNUAL GENERAL MEETING

THE annual general meeting of the society was held at Victory House, Leicester-square, London, W.C., on Wednesday, June 12th, 1935. The chair was taken during the first part of the proceedings by Dr. G. F. STEBBING, chairman of council, who said, in moving that the annual report, statement of accounts, and balance sheet be received and adopted, that the year had seen a large increase in the amount of work of the society, the applications from members for advice and assistance having risen in number from something like 1200 the year before to 1460 during the year under review. He added "there has been a considerable increase in the membership of the society; we have elected 984 new members during 1934. It is interesting to notice that on the average we have had an application for assistance from every ten of our members—in other words, 10 per cent. of our members have had occasion to turn to us during the year. The society has ample funds at its disposal, and has never hesitated to use them when the members' interests required it, and this year an amount actually in excess of the subscription revenue has been spent on behalf of the members." Dr. Stebbing then referred to the extremely varied nature of the work undertaken for the members, alluding specially to questions connected with National Health Insurance, as well as to the variety of troubles and accidents which might happen to the practitioner in the course of his duties, some of which might only incidentally relate to practice but nevertheless must greatly affect the welfare of the doctor. He pointed out that apart from legal defence and advice the society was able to help members on many matters which might seem scarcely to come within the strict scope of their business but where none the less guidance might benefit a member. He recalled the memories of Sir John Rose Bradford and Sir Thomas Parkinson in a few words, and closed by alluding to the necessity of an extraordinary general meeting to approve certain alterations in the Memorandum of Association.

Dr. R. L. GUTHRIE, the treasurer, pointed out that the balance sheet and accounts contained in the report required little explanation. He reminded the audience that the year 1934 could hardly be as prosperous pecuniarily speaking as its predecessor because a number of expenses and unsettled cases were outstanding at the end of 1933, so that but for a profit made by the sale of certain short-dated securities there would have been a small loss in 1934. Disclaiming the gift of prophecy, he said that the prospects this year looked better as the society had not so many expensive cases in hand. The capital position he pointed out was sound; all the investments were gilt-edged and appreciation of capital value had further increased. The policy of the society, however, had always been to keep the assets liquid and available for the benefit of members rather than to hoard up reserves, and in the year under review the analysis of expenditure showed that 16*s.* 3*d.* of a pound subscribed by members had been spent in their legal defence.

Sir CHARLES GORDON-WATSON then proposed that Sir Cuthbert Wallace should be elected president of the society in the place of the late Sir John Rose Bradford. The resolution, being seconded by Mr. Sidney Spokes, was carried unanimously with applause, and Sir Cuthbert took charge of the meeting.

The election of the vice-presidents followed, when Dr. C. O. HAWTHORNE spoke eloquently of the loss which the society had sustained by the death of its late president who had spent so much time and employed so much experience for the benefit of the society, while he added words of personal welcome to Sir Charles Gordon-Watson.

The re-election of Dr. R. L. Guthrie as treasurer and Dr. C. M. Fegen as secretary followed, and the meeting closed with votes of thanks to the solicitors, Messrs. Le Brasseur and Oakley, the auditors, Messrs. Duncan, Allwork and Co., and to the staff.

EXTRAORDINARY GENERAL MEETING

An extraordinary general meeting was then held when certain resolutions were submitted as special resolutions. The chair was taken by Dr. Stebbing, who said: "The first resolution concerns a proposed alteration in the provisions of the Memorandum of Association. This alteration has become necessary because of the situation that has arisen owing to the passing of the Law Reform (Miscellaneous Provisions) Act, 1934. Under that Act it has now become possible for actions to be commenced against the estate of deceased persons in regard to some act or fault during their lifetime. It has been recognised that this may have a detrimental effect on the estate of a deceased member, as owing to membership ceasing with death, the society would not have been in a position to defend his reputation. This alteration is being made to meet that situation, so that the Association may be in a position to protect a member's character and reputation after his death.

"As we have to make this amendment, we have taken advantage of the occasion to make a further small alteration so that we may further the coöperation which has existed between this society and the Medical Defence Union. It sometimes happens that in respect of deeds of partnership or other circumstances it is desirable for a member to change from one society to another. There was a period after such change during which a member was unprotected. The purpose of the alteration of the Articles is to protect the member fully. I propose the following resolutions as special resolutions:—

"1. That the provisions of the Memorandum of Association of the society with respect to the society's objects be altered as follows: By inserting between para. (c) and para. (D) of clause 3 of the Memorandum of Association of the society the following para. (cc), namely: '(cc). To grant to the personal representatives of any deceased member of the society any of the privileges which such member would have been entitled to as a member if he were still living.'

"2. That the Articles of Association of the society be altered in manner following, that is to say: (*a*) The following words, viz.: 'or his personal representatives' shall be inserted after the word 'member' where such word occurs in Article 16 of the Articles of Association of the society excepting where the word 'member' occurs in proviso (A) of such Article. (*b*) The following words, viz.: '*unless he was a member, at the time of the cause of action arising, of another Association with objects similar to those of the society*' shall be added to proviso (A) of such Article 16."

The resolutions proposed from the chair were put to the meeting and declared to be carried unanimously and the business of the meeting then concluded.

MEDICINE AND THE LAW

Statutory Restrictions on Professional Advertising in America

IN many of the United States of America the practice of dental surgery is regulated directly by the legislature instead of standards of professional conduct being left, as in this country, to be defined and enforced by an autonomous council containing representatives of the practitioners. An interesting decision has lately been given by the Supreme Court of the United States in connexion with a law passed by the State of Oregon in 1933. The State had enacted that a licence to practise dentistry might be revoked if the licence-holder was guilty of various improprieties which in Britain would be breaches of professional etiquette recognised as such by rulings of the General Medical Council and possibly emphasised by warning notice. The improprieties were thus set forth in the Oregon statute:—

"Advertising professional superiority or the performance of professional services in a superior manner: advertising prices for professional service: advertising by means of large display, glaring light signs, or containing as a part thereof the representation of a tooth, teeth, bridge work or any portion of the human head: employing or making use of advertising solicitors or free publicity press agents: or advertising any dental work or free examination: or advertising to guarantee any dental service or to perform any dental operation painlessly."

It is understood that in the past three years many other States of America have enacted similar laws so that gradually a uniform professional code is being extended throughout the whole country. The subject of professional conduct is one which is within the legislative competence of the several States; the Federal Legislature does not deal with it. But, owing to the rigid written constitution of America, it is often possible to argue that a legislature (either a State legislature or the Federal Legislature itself) has exceeded its functions by overstepping the prescribed boundaries.

A recent illustration, annotated in the *J.A.M.A.*, June 1st, was the decision of the Supreme Court of the United States which held certain enactments invalid on which President Roosevelt relied for his "new deal." A dentist in Oregon, having apparently offended against the Oregon statute, invited the courts to rule that the statute was unconstitutional inasmuch as it denied due process of law and equal protection under the law and impaired the obligation of contracts. Such an argument against an Act of Parliament in England would be impossible; we have an elastic constitution with nothing rigid except in the inter-Imperial field where nowadays the Statute of Westminster applies. Our Parliament is bound by no written limits but can pass any laws it likes. The Oregon dentist, alleging that the statutory restrictions on advertising offended something fundamental in the American constitution, failed to make good his contention in the courts of his State and appealed to the Supreme Court of the United States. Here he met with a further rebuff. The Supreme Court declared that the State legislature was fully authorised to check the harmful effects of professional malpractices. It was not a matter of traders in commodities, but of public health and of a profession demanding standards of conduct different from those which are traditional in the competition of the market place.

"The community is concerned with the maintenance of professional standards which will insure not only competency in individual practitioners but protection against those who would prey upon a public peculiarly susceptible to imposition through alluring promises of physical relief; and the community is concerned in providing safeguards not only against deception but against practices which would tend to demoralise the profession by forcing its members into an unseemly rivalry which would enlarge the opportunities of the least scrupulous. What is generally called the 'ethics' of the profession is but the consensus of expert opinion as to the necessity of such standards."

The position has seldom been stated in more weighty or more dignified language.

One point had been stressed by the appellant. He claimed that his advertisement of "professional superiority" was nothing but the truth, and he asserted that the law could not interfere where no unwarranted or misleading assertions had been made. The Supreme Court gave no countenance to this argument. The legislature, it observed, when framing a policy, was not bound to provide for assessment of the relative proficiency of individual practitioners. It was entitled to consider the general effects of the practices which it described; if those effects were injurious in facilitating unwarranted and misleading claims, the State was entitled to counteract them by a general rule even though in particular instances there might be no actual deception. Thus the standards of professional conduct in the United States and in this country are reaching the same salutary level though by different methods of approach. In the one case the legislature intervenes; in the other it delegates control to an ad hoc body whose actions and decisions public opinion is prepared to accept as authoritative.

Hospitals and the Companies Act

A public notice in the press shows that the Queen's Hospital for Children is applying to the Board of Trade (under Section 18 of the Companies Act) for a licence to be registered as a limited company without the addition of the word "limited" to its name. This is a convenient procedure where an association is to be formed or maintained "for promoting commerce, art, science, religion, charity, or any other useful object," and where the profits or income (if any) will be devoted to promoting the object and not to the payment of a dividend to the members. Such an association, if thus registered, enjoys substantially all the privileges of limited companies. It gains in stability and permanence, for it becomes a body corporate with perpetual succession just as if it had been incorporated by Act of Parliament or by Royal Charter. It can hold property in its own name without the intervention of trustees; it can make contracts and can take and defend legal proceedings in its own name. It can conduct its affairs more efficiently and its officers and members are freed from personal liability.

When in 1867 Parliament first provided this facility for constituting a company under the Companies Act while dispensing with the word "Limited," advantage was taken of it by local chambers of commerce, law societies, and trade protection societies. Gradually the scope was widened, and in the next 15 years the companies thus registered included such various examples as the College of Organists, the Institution of Mechanical Engineers, the Cheltenham Ladies' College, the Palestine Exploration Fund, Newnham College, and the British Dental Association. Where the registered company is absorbing some existing association, the property is transferred to the new entity and, unless there is legal difficulty over some question of trusts, the transition from the old organisation to the new is easy. The new company can declare its objects in wide terms. Thus a hospital can obtain powers not only to maintain its charitable services for the poor, but also to provide accommodation for payment where patients can afford to pay. Naturally, like ordinary companies under the Companies Act, it will state its purposes comprehensively because the law will confine the body's future activities within the limits so defined and anything outside those boundaries will be ultra vires. An incorporated company is an independent legal entity with an existence separate from the existences of the total of its members. It does not die when its members die.

Most people are aware of the alternative legal device for securing perpetuity in the holding of property for collective objects—namely, the appointment of trustees who form a sort of hedge in which new plants can be inserted from time to time as the old die off. The system of incorporated companies dispenses with the system of trustees. Corporateness was anciently regarded as a privilege or concession which the Crown would award to particular bodies for good reasons. Cities and boroughs, universities and colleges, and a few commercial undertakings like the East India Company were favoured recipients. Many ancient hospitals can show their Royal Charters of incorporation; the younger institutions are less fortunate. But the old restrictive idea of corporateness as a Royal concession has been found inconvenient. In the nineteenth century a new mass-production corporateness became possible by the mere registration of a few members of an association at Somerset House under a series of Companies Acts. A remarkable development of commerce and industry has resulted. The value of the new principle is not confined to enterprises conducted for profit.

Birmingham and Midland Skin Hospital.—On July 10th a new hospital for in-patients, with modern equipment, including a department for the treatment of cancer, will be opened in Edgbaston, and the present quarters in the city will be used only for out-patients. About £10,000 is still required for the new hospital, of which £6000 is for the cancer department.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

CHANGES AT GLASGOW

THE retirement of no fewer than five professors from the University of Glasgow was intimated at a meeting of the university court last week, and three of these are medical men—namely, Prof. T. H. Bryce, F.R.S., of the chair of anatomy; Prof. Andrew Hunter, of the chair of physiological chemistry; and Prof. Peter Paterson, of the chair of surgery. Sir Robert Rait, principal of the University, in paying tribute to the retiring professors, said that Prof. Paterson had occupied the St. Mungo chair of surgery since 1924, and that the University was deeply indebted to him for the skill and devotion which he had brought to the teaching of surgery in the Royal Infirmary. Prof. Andrew Hunter came from the University of Toronto in 1929 to succeed Prof. E. P. Cathcart in the Gardiner chair of physiological chemistry; he is now returning to Toronto. Prof. Bryce had been working in the department of anatomy since 1890, and had been head of the department since 1909. In addition to his well-known anatomical work, he had done memorable service to the science of anthropology and to the study of archæology.

It was announced that the court have appointed Dr. G. N. Wishart, at present lecturer in physiology, to succeed Prof. Hunter in the chair of physiological chemistry.

HOURS OF WORK FOR NURSES

At a meeting of the health committee of Glasgow corporation last week a proposal was considered which would limit the hours of nurses in attendance in the various corporation institutions to 48 per week, and in mental institutions to 42 per week. It was pointed out that the proposed alteration would necessitate the employment of over 600 extra staff, at a cost of £185,000. After discussion an amendment was carried which stated that the committee agreed to the principle of 48 hours per week for fever and general hospitals, and that they remit back the proposal to limit hours to 42 in mental institutions, and consult with the trade-union officials interested.

ILLEGIBLE WRITING A PENAL OFFENCE

Mr. A. B. Gilmour, who is superintendent of the Central Checking Bureau in Scotland under the National Health Insurance Act, in an address to members of the Glasgow Rotary Club raised the possibility of legal action being taken against doctors who write prescriptions illegibly. He referred to a recent instance in the north of Scotland when a poison had been wrongly read in a prescription, and said that such errors suggested that it might be necessary to have a law in this country similar to a law in Norway, under which the illegible writing of prescriptions was a punishable offence.

Guy's Hospital.—The annual report of Guy's Hospital for 1934 lays stress on the urgent need of additional accommodation for the nursing staff and the staffing of Nuffield House, towards the erection of which Lord Nuffield gave £65,000. The block, which it is hoped to open this autumn, will accommodate 75 paying patients. The report speaks of an increase of support from the public which, with strict economy within the hospital, has resulted in an improvement in the hospital finances. There is no available surplus, however, from which funds could be drawn for the provision of further accommodation for nurses. Another pressing necessity is for the enlargement of the hospital dispensary.

PANEL AND CONTRACT PRACTICE

South Africa and Health Insurance

THE question of adopting some form of national health insurance has during recent years been much discussed in the overseas dominions, where it has been reported upon by several Royal Commissions. In South Africa particularly it has lately been much to the fore in medical circles, and during the present year its advantages and disadvantages have been considered at some length in the *S.A. Medical Journal.* A leading article in its issue of May 11th refers to the decisions adverse to health insurance recently adopted by the American Medical Association, the special report of the A.M.A. being reproduced in the same issue. This report is evidently regarded as a warning to South African doctors, and importance is apparently attached to statistics published by the A.M.A. purporting to show that the death-rates from certain diseases are higher in countries that have adopted State health insurance schemes than in America, which has no such scheme—ergo, health insurance does not conduce to a healthy community. It is a little difficult to imagine how such an argument came to be advanced or why it is thought to be worthy of mention. Stranger still is a long quotation from the March issue of *Colorado Medicine,* which includes the statement that "in the sickness-insurance-ridden countries of Europe, after years of experience, there now are developing more and more appeals for an abandonment of the scheme, and in favour of a return to individual responsibility." Over against this statement may be set the fact that the area of compulsory health insurance is increasing in Europe; within the last three years, for instance, the Danish scheme has been transferred from a voluntary to a compulsory basis. We would respectfully suggest that if doctors in the dominions wish to make a serious study of the practical working of national health insurance and its effects on medical practice information may profitably be sought in countries in which it is in operation. The British system, which has stood the test of 23 years' experience, including the exacting war years, was framed largely on lines laid down by the medical profession, and on its medical side is to a large extent administered by the profession. From a careful study of this scheme, its merits and its demerits, lessons on health insurance may be learnt. In South Africa the question is complicated by the existence of a native population outnumbering the European population by about ten to one; in such a community the problem of providing adequate medical services for all who need it, and adequate remuneration for the practitioners giving those services, must be peculiarly difficult to solve. But problems still more difficult have been successfully solved in South Africa, and we have no doubt that the provision of medical care to the satisfaction of the public and the profession will yield to energetic attack.

Essex Public Medical Service.

The eleventh annual report of this service shows good progress. The subscriptions which in previous years had increased by about £20–£25 weekly each year rose by £45 in 1934. At the end of the year there were 319 (doctor) members of the scheme, 254 active and 65 honorary, while 7271 new (patient) subscribers were registered during the year. At Dec. 31st, 1934, after deducting cancellations there were 14,866 books on which payments were being made, an increase of 2134 over the previous year: these books represented 26,095 subscribers—13,814 adults and 12,281 children. Sixty-one applications for assistance from the appliances fund (hitherto miscalled the benevolent fund) were approved; they ranged from surgical belts and the like to ambulance charges, nursing and massage. The revenue authorities having decided that the "profits" of public medical services are liable for income tax, the surplus to the end of 1933, of which £775 16*s.* was calculated as due to members, has been distributed to them to include in their income tax returns, with the exception of a nominal amount carried forward to the next distribution, which in future will be effected yearly.

PUBLIC HEALTH

The Housing Bill: Age and Air Space

IN a letter to the *New Statesman* of June 8th, Prof. Ralph Picken suggests, very reasonably, that the main object of the prevention of overcrowding is the promotion of the public health. He points out that although exception has been taken, during the passage of the Housing Bill through the House of Commons, to the failure to exclude living rooms in measuring the permissible occupancy of a house, the existing practice of differentiating between adults and children in the allowance of air space has been perpetuated. Thus, for this purpose, an adult is a unit, a child between 1 and 10 years of age half a unit, and an infant under a year a cipher. Prof. Picken observes that at one time preventive medicine was influenced by the idea that the evil effects of overcrowding arose from air starvation and so it was deemed that "a child naturally needed less air than a full-grown person." Yet, as he says, the most clearly demonstrable effect on health of overcrowding within houses is the greater opportunity it affords for the spread of infection, and he notes with approval the prominence which was given in the daily press to those portions of the latest annual review of the Registrar-General which stressed the association of overcrowding with high mortality from diseases of the respiratory system amongst children in towns especially.

In one of those admirable studies in field epidemiology for which the public health department of Glasgow is conspicuous, C. M. Smith,[1] investigating housing conditions and respiratory disease, found that the attack-rate per thousand of acute respiratory infections during an influenza epidemic was 340·0 among children under 5 years of age, as compared with 234·2 at all ages. During the non-epidemic part of the year the same age-group experienced the greatest incidence of acute respiratory disease.

Smith suggests that when conditions, such as respiratory diseases, which are disseminated by droplet infection are under consideration, overcrowding should be assessed on the standard of sleeping arrangements. Among those who have to deal with children, sick or well, as human beings and not as units in a scheme, opinion is unanimous about the overwhelming importance, as causes of morbidity and mortality, of acute infections of the upper respiratory and respiratory tracts, especially those of so-called influenzal type. Further, in face of the recorded mortality-rates, opinion could not be other than unanimous that these infections are lethal inversely as the age of the child attacked. Whether the sleeping quarters of a child be bedroom, dormitory or, for the time being, the ward of a children's hospital, none amongst the instructed will be found to underrate the macabre part which overcrowding plays in the dissemination of infections of the respiratory tract.

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[1] Med. Res. Council, Special Rep. Series, No. 192, 1934.

The results in a children's ward where in the matter of cot-space an infant was deemed to be of no account and a child under 10 years of age to require only half the space of his neighbour 2 years older may be imagined. They are not likely to be described since such an arrangement would be the negation of sane administration. The child in the overcrowded home to-day is the children's hospital patient to-morrow. It would appear, if the discriminating provisions of the Bill are maintained, that only when he joins one of those republics of sick children will justice to his requirements of air space be done, possibly when it is too late to save his life.

The M.O.H. and Diets

As adviser to health, education, and maternity and child welfare committees, the medical officer of health is expected to have a precise knowledge of the nutritional value of the articles of food of which dietaries are comprised. As administrative officer in charge of a staff, one of whose duties is to assess the nutritional state of children, he must have definite ideas as to the value of the several standards of nutritional normality or abnormality in current use. The literature on these subjects is voluminous. New discoveries or theories can be followed in medical and scientific journals, but naturally writers devote special attention to the topics which are of primary interest to themselves, and the unspecialised reader is hard put to sift the ephemeral from the genuine article. Text-books, on the other hand, are apt to be out of date soon after they are published, so rapid are the additions to our real knowledge. Even the very valuable reports and memoranda of the Ministry of Health and various committees, national and international, which have been issued in recent years fail to cover all the ground required by an officer engaged in the multifarious duties of modern public health. A balanced and concise statement of present-day views was wanted, and the need has been admirably met by a report just issued from the public health department of Glasgow.[1] Dr. Seiler, who is responsible for it, has had the advantage of the advice and guidance of Prof. E. P. Cathcart, so that the review may be regarded as authoritative. It has been prepared primarily for the use of the Glasgow Health Department, but Dr. A. S. M. Macgregor, medical officer of health, hopes that it will be of service to the departmental committee on Scottish Health Services. If it is made available it should find many readers outside these circles, for there is no other publication of the size which deals so thoroughly with all the established facts and recent work bearing on foods, the substances of which they are made up, the mode of measuring requirements of energy and replacement, the assessment of malnutrition, and the application of this knowledge to the practical problems of health. For those who desire to pursue further any of the matters dealt with, 108 references to original writings are given.

No one but the specialist can carry all this material in his memory. The survey should be read carefully by those who can obtain it, but it should prove even more valuable to medical officers of health for reference in the preparation of reports, and in facing the sometimes tendentious questions and criticisms of lay members of committees.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 8TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2072; diphtheria, 943; enteric fever, 27; acute pneumonia (primary or influenzal), 1126; puerperal fever, 49; puerperal pyrexia, 131; cerebro-spinal fever, 24; acute poliomyelitis, 4; acute polio-encephalitis, 1; encephalitis lethargica, 9; dysentery, 22; ophthalmia neonatorum 108. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 14th was 2897, which included: Scarlet fever, 930; diphtheria, 1105; measles, 40; whooping-cough, 354; puerperal fever, 34 mothers (plus 11 babies); encephalitis lethargica, 269; poliomyelitis, 2. At St. Margaret's Hospital there were 14 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 20 (0) from measles, 3 (1) from scarlet fever, 26 (2) from whooping-cough, 20 (3) from diphtheria, 30 (15) from diarrhœa and enteritis under two years, and 60 (4) from influenza. The figures in parentheses are those for London itself.

Blackpool reported the only fatal case of enteric fever. Three deaths from measles occurred at Liverpool and Birmingham. No great town, except London, reported more than a single death from diphtheria. Of the deaths attributed to influenza 5 occurred at Sheffield, 4 at Bradford.

The number of stillbirths notified during the week was 263 (corresponding to a rate of 38 per 1000 total births), including 36 in London.

SOUTH-EASTERN HOSPITAL FOR CHILDREN, SYDENHAM.—The Duchess of Kent recently opened the new wing of this hospital, which has been built and equipped at a cost of £28,000. It has increased the number of available beds from 72 to 100 while releasing wards in the old building for administrative purposes. It also includes X ray, sunlight, and casualty departments and four single bed wards for private patients. Last year the institution dealt with 33,000 out-patients and 1500 in-patients.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A second "refresher" course in medicine, surgery, and the specialties will be given at the Prince of Wales's Hospital, from July 1st to 13th. Other forthcoming courses include proctology at St. Mark's Hospital (July 1st to 6th), urology at the All Saints' Hospital (July 8th to 27th), general medicine and surgery at the Southend Hospital (July 13th and 14th), dermatology at the Southend Hospital (every afternoon from July 15th to 27th). A special demonstration on the fundus oculi will be given by Mr. R. Lindsay Rea, on Tuesday, July 2nd, at 8.30 P.M., at the in-patient department of the West End Hospital for Nervous Diseases. A panel of teachers is prepared to give individual instruction in various branches of medicine and surgery, daily. With the exception of the cardiology course, courses and clinics arranged by the fellowship are open only to members and associates. The secretary of the fellowship may be addressed at 1, Wimpole-street, London, W.1.

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[1] Diet and Nutrition. A Survey of Recent Work. By H. E. Seiler, M.D., D.P.H., Senior Assistant Medical Officer, Public Health Department, Corporation of Glasgow. Pp. 48.

OBITUARY

WILLIAM EDWARD HOME, B.Sc., M.D. Edin., O.B.E.

FLEET-SURGEON, R.N.

THE death occurred at Southborough, Kent, of Fleet-Surgeon Home whose forcible pleas for improvement in many directions of the mercantile marine will be familiar to our readers.

William Edward Home was born in 1860 and had a fine medical lineage, for both his great grandfather and his grandfather were professors of materia medica in the University of Edinburgh, and both became presidents of the Royal College of Physicians of Edinburgh. Home's father, William Lewis Home, was an officer in the Army Medical Services, and served in China, Mauritius and the Crimea. His mother, Miss Charlotte Grome, died shortly after his birth, and he was only 16 when he lost his father. He received his general education at Rugby and entered the University of Edinburgh, where he read in the science schools, and graduated as B.Sc. in 1882. He then proceeded for his medical course and took the degrees of M.B., C.M.Edin. in 1885, and entered the medical service of the navy immediately and served with the Duke of Edinburgh—later Duke of Saxe-Coburg and Gotha—on the Mediterranean flag-ship *Alexandra*. On the *Thrush* and the *Melampus* he had as a brother officer H.M. King George. He was now to see active service for as surgeon to the *Swallow*, on the Cape and West Africa station, forming part of a naval brigade sent out for the purpose, he took part in a punitive expedition to punish a robber chief at Zanzibar, and he received the General African Medal in 1893 with the Vitu clasp. He was promoted staff surgeon in 1897, and in 1900 served during the China war and received the China medal. He was appointed in 1897 staff surgeon to the *Tamar* at Hong Kong, and became fleet surgeon in 1901. Hospital appointments at home followed, and he retired from the service in 1911 with the decoration, O.B.E.

[Photograph by Army & Navy Auxiliary C.S.

FLEET-SURGEON W. E. HOME

Fleet-Surgeon Home now left England for British Columbia, and from 1912 to 1916 was on the staff of the Victoria Hospital, B.C., and bacteriologist to the hospital. He resigned that post in 1916 and returned to England to take a commission in the R.A.M.C., and with the rank of temporary major served in the R.A.M.C. for seven years. During the war he was mainly engaged in transport operations on board the hospital ships *Warilda*, *Glenart Castle*, *Essequibo*, *Dongola*, and others, and became deeply interested in the hygiene of ships and the precautions taken for due sanitary care of the crews. At the termination of hostilities, he continued to serve in military hospitals, among others Cosham for three years, finally retiring in 1923. His impressions derived during the war led him to become a candid critic of the sanitary provisions made for the men of the mercantile marine, and he wrote in these columns many valuable articles on the subject, some of which were incorporated in a book, published in 1921 entitled, "Merchant Seamen, their Diseases and their Welfare Needs." There is no doubt that the mercantile marine owes a great deal to Home, for he pointed out many places in which reforms were necessary, and although his writing was always of a downright character, he testified invariably to the goodwill of the ship owners, though he was impatient with the attitude of the Board of Trade. He had the right reforming spirit, while in the various articles which he wrote for THE LANCET he spared no pains in his personal investigations of various ships to be accurate, to commend what deserved credit, and when criticising faulty conditions to give full reasons for his strictures. This he was able to do from a strong position, for he used all opportunities to keep abreast of medical progress, by reading, reviewing, and attendance at many medical societies.

Home was an invalid at the latter end of his life, and recently had undergone a severe operation, but to the end remained courageous and interested in the work which he had set himself. He married in 1896 Ida Mary Geraldine Richardson, a niece of Admiral Sir Frederick Bedford, who was Commander-in-Chief at the Cape when Home was on the *Swallow*; she survives him but there were no children of the marriage.

The portrait represents him at the age of 56, when he joined the R.A.M.C.

CHARLES ROBERTS, M.B. Lond., F.R.C.S. Eng.

CONSULTING SURGEON, MANCHESTER ROYAL INFIRMARY

THE death occurred on Sunday, June 9th, of Mr. Charles Roberts, the well-known Manchester surgeon. He received his medical education at the Middlesex Hospital, where he gained an entrance scholarship, and he graduated with honours as M.B., B.S. Lond. in 1896, in which year he also took the English double diplomas. He continued to secure a series of prizes and exhibitions at the hospital in medicine, surgery, and obstetrics, and obtained the F.R.C.S. Eng. in 1899. He filled all the resident appointments at the Middlesex Hospital, where he was casualty officer at the time of the outbreak of the South African War. Here he saw hard service as civil surgeon with the South African Field Force. At the close of hostilities he began his long career at Manchester with the appointment of resident surgical officer at the Manchester Royal Infirmary. He also lectured on clinical and practical surgery in the medical school of Manchester University, and in 1911 was appointed surgeon to the infirmary and at the same time to the Manchester Children's Hospital at Pendlebury. At the outbreak of the European war he went out to France with the 1st Expeditionary Force and served through the earliest stages of the campaign with the 18th Field Ambulance.

Roberts remained on the active staff of the infirmary until 1934 when he attained the age limit of 60, and his retirement followed to the regret of all associated with him and the institution. He did not write much and only from the standpoint of personal experience. To our columns he contributed a descriptive article on operations for ectopion vesicæ, to the *Middlesex Hospital Journal* one on surgery in the

Boer War, and to the *British Medical Journal* an article on the treatment of abdominal wounds in war, also from experience gained in South Africa. But although he wrote little he gained a high reputation as a teacher, as a general surgeon, and perhaps particularly as a pædiatrist. He was a member of the Association of Surgeons of Great Britain and Ireland, and his colleagues recognised him as a fine exponent of surgery.

JOHN STOKES, M.D. Durh., LL.B. Sheffield

THE medical profession and a large number of friends and patients have learned with regret of the death of Dr. John Stokes, late consulting physician to the Sheffield Children's Hospital. He received his education at the Sheffield Grammar School and at the universities of Sheffield, London, and Durham, and graduated in two faculties, those of law and medicine, being B.Sc. Lond., LL.B. Sheffield, and M.D. Durh. He qualified in medicine in 1887 and 20 years later was called to the Bar at the Inner Temple. He was, as this brief record shows, a man of great energy and varied interests and especially in the masonic world was he a prominent personality. He was a Past Master of several lodges and of the Quatuor Coronati, ten years ago he was Grand Deacon of England, and in 1928 became Deputy Provincial Grand Master. His long and distinguished masonic work brought him into touch with a number of influential people and his funeral was remarkable for the number of attendants, representing the medical profession, different universities, freemasonry and archæology, as well as personal relations.

JOSEPH H. ENSOR TROUT, L.R.C.P. Edin.

Dr. Ensor Trout, who died last week at his home in Edgbaston at the age of 71, was the son of a working jeweller and first studied medicine as page in a doctor's surgery. Coming under the notice of Mr. Lawson Tait he was sent to Mason College and went on to Surgeons' Hall, Edinburgh, from which he took the Scottish triple qualification in 1894 with honours in anatomy. After qualification he returned to Birmingham as resident surgical assistant at Queen's Hospital, obtained some experience of general practice as an assistant and then set up for himself at the corner of Ingleby Street and Monument Road where his surgery remained for 50 years. In pre-National Insurance days it was said that he had the biggest working-class practice in England. In one street alone, he was once heard to say, enough money was owing to him to have bought him a Rolls Royce. Early on he became surgeon to Piggott's engineering works and as time passed he became attached to various branches of group practice. As "vet" to the Bostock menagerie he once rode through the streets to the Weston Road Institution—he was one of the oldest members of the Birmingham board of guardians—on the back of an elephant. During the war he undertook to give free medical service to the wives of men who joined the Army from the district in which he practised. His personal popularity was great throughout Birmingham and was perhaps enhanced by his extraordinary resemblance to a well-known politician. Dr. Trout married 43 years ago Miss Helen Elizabeth Abell, theatre sister to Mr. Jordan Lloyd. His only son Mr. Lawson Trout, to whom we owe many of these interesting particulars, is the godchild of Lawson Tait.

BERNARD D. Z. WRIGHT, M.R.C.S., L.R.C.P.

Bernard Duncan Zorapore Wright, although he had recently retired from practice, was very well remembered by a large circle in Norfolk. His death occurred at his house at Hoveton St. John on June 10th, and was a sequel to serious operations. Born at Canterbury, the son of John William Zorapore Wright, he was educated at Rugby and proceeded for his medical education to St. Bartholomew's Hospital. He took the English double diploma in 1907 and practised all his life in Norfolk. He came to the county as a locum tenens immediately on registration and until two years ago was practising at Coltishall. He was a valuable and energetic worker in the cause of the Norfolk and Norwich Hospital, was for many years a member of the management committee and for a time its chairman. A coöpted member of the Norfolk County Council he served on the county insurance committee and was chairman of the panel committee. He was also, for many years, M.O.H. for the Smallburgh R.D.C. Dr. Wright's public services, it will be seen, were many and valuable, and his death has given rise to wide regret in the county of Norfolk.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. F. C. Wright to *President* for further course, and to *Drake* for R.N. Hospital, Plymouth.

Surg. Lt. C. N. H. Joynt to *President* for course.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdrs. C. C. Elliott and H. Parry-Price to *Tiverton*.

Surg. Lt.-Comdrs. R. H. Enoch to *Royal Sovereign*; R. B. H. Wyatt to *Tiverton*; and J. L. Cox to *Tiverton*.

Surg. Lts. R. D. Bradshaw promoted to Surg. Lt.-Comdr.; J. F. Heggie to *Tiverton*; and R. W. G. Lancashire (proby.), to R.N. Hospl., Chatham.

Proby. Surg. Lt. (D.) J. Bunyan to R.N. Hospl., Chatham.

ARMY MEDICAL SERVICES

Col. W. Benson, C.B.E., D.S.O., M.B., late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. T. H. Scott, D.S.O., M.C., M.B., from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. F. Worthington, D.S.O., O.B.E., having attained the age for retirement, is placed on ret. pay.

The undermentioned Majs. to be Lt.-Cols.: E. C. Beddows, M.C., and J. Rowe, M.C.

Major T. O. Thompson, R.A.M.C., has been awarded the Alexander memorial prize for 1934 consisting of a gold medal and a sum of £40 for his work in the interests of military hygiene. Major H. T. Findlay, R.A.M.C., has been awarded the Leishman memorial prize for 1934, consisting of a silver medal and a sum of £30, for his work in the interests of military pathology.

TERRITORIAL ARMY

Capt. P. J. Stokes to be Maj.

Capt. H. A. Raeburn from supern. for serv. with Edinburgh Univ. Contgt. (Med. Unit), Sen. Div., O.T.C., to be Capt.

Lts. P. R. Goodfellow, S. McDonald, and E. A. Cormack to be Capts.

ROYAL AIR FORCE

Squadron Leaders H. W. Corner to R.A.F. Station Andover, for duty as medical officer; E. Thompson to Princess Mary's R.A.F. Hospital, Halton, for duty as medical officer; R. L. C. Fisher to Central Medical Establishment, London, for duty as medical officer with

(*Continued at foot of next page*)

CORRESPONDENCE

MALARIA AND RACIAL EXTINCTION

To the Editor of THE LANCET

SIR,—Your leading article of May 25th expresses a hope that the Government of North Borneo will now undertake work to save the Muruts. I need hardly say that I share this hope. The immediate distribution of large quantities of quinine and Euquinine, especially amongst women of child-bearing age, and children of all ages, will stay the present rapid decline in population, and will also be an encouragement to the natives to coöperate in rural sanitary measures, the reason for which they cannot be expected to understand. Incidentally I may remark that the ultimate responsibility for the welfare of the natives of North Borneo rests upon His Majesty's Government; for Section 10 of Queen Victoria's Charter requires :—

> "If at any time Our Secretary of State thinks fit to dissent from or object to any part of the proceedings or the system of the Company relative to the people of Borneo or to any of the inhabitants thereof in respect of slavery or religion or the administration of Justice or other matter and to make to the Company any suggestion founded on that dissent or objection the Company shall act in accordance therewith."

You make one statement, however, which I cannot allow to go unchallenged—namely, that "the decrease in native populations is often due to subtle influences of an imponderable psychological character." On reading these words I could only ask myself whether this was indeed the twentieth century or whether we were living once again in the world of vital spirits, humours, effluvium, animal magnetism, and miasma. The recollection of these old dogmas—I had thought them safely in their tombs—was succeeded by a vision of dejected diseased little Muruts, waiting to beg exemption from a crushing poll tax. The invocation of imponderable influences seems scarcely necessary when other factors are so obvious, and by way of illustration there is no need perhaps to go further than two passages from current literature :—

> "When circumstances are such that an infection can saturate almost the entire population of crowded regions, the result is what the Germans call *Durchseuchung*. The accidentally less susceptible survive. . . . The simplest demonstration of such changes is the rapidity of spread and the virulence of a disease when it is first introduced into the reservoir of an aboriginal—that is, entirely susceptible—population. When measles first came to the Fiji Islands in 1875, as a result of the visit of the King of the Fijis and his son to Sydney in New South Wales, it caused the death of 40,000 people in a population of about 150,000. Another example is the terrific violence of small-pox when first introduced among the Mexican Indians by a Negro from the ship of Narvaez. The virulence of tuberculosis for Negroes, Eskimos, and American Indians living in contact with whites is another case in point. Any number of illustrations of this kind might be cited."[1]

> ". . . in the case of British Guiana . . . nothing in the way of hinterland development . . . has been a lasting excuse for the wiping out of the aborigine . . . the Indians had contracted various diseases, among which influenza was the most devastating. He caught influenza, but there was no medicine left behind for him, so he and often his entire family took to their hammocks and quietly died."[2]

I am, Sir, yours faithfully,

Whiston-street, E., June 15th. A. J. COPELAND.

AUSCULTATORY PERCUSSION IN ASCITES

To the Editor of THE LANCET

SIR,—In an interesting annotation under this title in your issue of Oct. 27th, 1934 (p. 938), you describe this auscultatory phenomenon as the "double bruit ascitique" of Lian and Odinet. I have also observed these same sounds in cases of ascites and published my results (Jour. Amer. Med. Assoc., March 21st, 1931) before Lian and Odinet's original publication on this subject appeared in 1931 (Soc. méd. des hôp. de Paris, July 10th). I am not attempting to claim priority, since I think the value of the sign is only of a confirmatory nature. I should like to make the point, however, in order to avoid confusion, that this physical sign, if included in text-books of physical diagnosis, should be described on the basis of its own properties and not associated with the name of the doctor who first observed it.

I am, Sir, yours faithfully,

J. THORNWELL WITHERSPOON.

Indianapolis, Indiana, June 6th.

CORONARY THROMBOSIS—THE FIRST YEAR AFTER

To the Editor of THE LANCET

Footprints, that perhaps another
A forlorn and shipwrecked brother,
Seeing, may take heart again.

SIR,—Whether the dinner or the speeches, or a combination of both was the exciting cause, is a matter of speculation, but the fact remains that it was during the after-dinner speeches at the Association of Surgeons' meeting in 1934 that the occlusion occurred. To a victim of coronary thrombosis who has read the article in THE LANCET[3] on the Prognosis in Coronary Thrombosis, the outlook is distinctly gloomy and depressing as regards the limitation of both life and its activities. I owe a debt of gratitude

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[1] Rats, Lice and History, Hans Zinsser, George Routledge and Sons, 1935, p. 67.
[2] Change in the Jungle, William La Varre, article in The Sphere, June 8th, 1935, pp. 442, 443.
[3] THE LANCET, Jan. 26th, 1935.

THE SERVICES (*continued from previous page*)

No. 2 Central Medical Board; T. V. O'Brien to Aircraft Depôt, Karachi, India, for duty as medical officer.

Flight Lt. C. Crowley to Central Medical Establishment.

Flying Offr. J. W. Patrick to No. 1 School of Technical Training (Apprentices), Halton.

INDIAN MEDICAL SERVICE

Capt. C. L. Ahluwalia relinquishes his temp. commn.

Capt. P. Shannon, I.M.S., has been awarded the North Persian Forces memorial medal for 1934 for his paper on A Study of Trachoma in Baluchistan, published in the *Indian Medical Gazette* of December, 1934.

COLONIAL MEDICAL SERVICE

Dr. J. M. Liston has been appointed Medical Officer, Kenya, and Dr. P. E. F. Routley Medical Officer, Malaya. Drs. D. S. Johnston and A. J. Murray become Medical Officers, Gold Coast; Dr. R. C. Jones Health Officer, Hong-Kong; Dr. L. V. P. Goupille Medical Officer, Hookworm Branch, Mauritius; and Dr. J. R. Pierre Assistant Radiologist, Mauritius.

to "Live and Learn" for recounting his more cheering experiences entitled Coronary Thrombosis and after, and it is with the hope that I in turn may bring cheer and comfort to another like sufferer that I am now recording my own history for the first year.

Being a surgeon, aged 50, it was necessary to continue at work to earn the weekly housekeeping and educate my sons. I was looked after by a physician who called in a professor of physic particularly well versed in the vagaries of coronary occlusions. "Bed for six weeks," said he, "and a complete rest for four months, then work at half speed till the end of the year." This I did faithfully, even to staying abed for seven weeks so as to be on the safe side. The result has been most gratifying, for when in May, 1935, he applied all his tests, ancient and modern, he asserted, and I believe truthfully, that he could find nothing amiss with the old pump.

There are a few rules which I have laid down for myself. Perhaps it is neurasthenia, but I imagine I do not feel as fit if I break any of them.

1. Breakfast in bed on Sundays.
2. Bed about 10 P.M.
3. Never to operate for more than three hours at a stretch.
4. An hour's sleep twixt lunch and dinner, unless absolutely impossible, for I must confess to becoming more easily tired than of yore.
5. No smoking till after dinner, and then one cigar. (All my old pipes have been thrown away.)
6. No more old brandy or port, only beer and occasional sherry.

So much for restriction, but despite these, life has not been dull. My broad-minded physicians allowed me to go out cub-hunting for a couple of hours at a time in September. Here I was prepared to argue as follows: if I am allowed to walk on my own two legs, may I be allowed to sit on my horse while he walks on his four legs! But there was no need for argument, my petition was granted, and on Nov. 1st I was allowed to go a-hunting. True my horse was taken on for me, and I only stayed out for two hours, but the pleasing fact remains that I was allowed to continue riding to hounds, and that without any ill-effects. Hunting one day a week, I was one of the lucky few who finished what was probably the best run of the season on an 8 mile point. Gradually staying out longer, on the last day I stayed out till hounds went home.

As ski-ing ("Live and Learn") and hunting are somewhat beyond the activities generally laid down for coronary occlusionists, I tell my tale not to incite others to be rash and do things beyond their more limited powers, but to show that with due care one can still work and derive pleasure out of life without being an altogether passive invalid.

I am, Sir, yours faithfully,

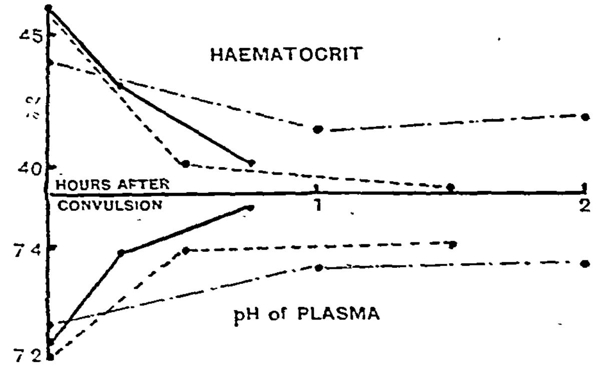
June 14th. AGAG THE SECOND.

WATER METABOLISM IN EPILEPSY

To the Editor of THE LANCET

SIR,—May I comment on two papers appearing in your last issue? In the first Drs. Fletcher and Peden report that the hæmatocrit (i.e., the percentage volume of the blood occupied by red corpuscles) is abnormally variable in epileptic subjects. Some years ago I made a few measurements of the pH of the plasma during and at short intervals after convulsions in an epileptic girl, and as the technique involved determination of the hæmatocrit, my notebook throws some light on the above question. In the accompanying diagram I have plotted out successive readings of pH and hæmatocrit obtained in three convulsions. The hæmatocrit of the patient between convulsions was usually about 40 per cent.

Two things seem clear from this chart: (1) that the hæmatocrit is slightly raised at the height of the convulsion, and afterwards falls gradually back to normal, and (2) that this change bears rough comparison with the pH curve. I also observed similar but more marked changes in rabbits during insulin convulsions. The explanation of these fluctuations is not difficult. During epileptic convulsions increased muscular work and respiratory embarrassment combine to cause considerable temporary acidosis, and it is well established that acidosis leads to transfer of fluid from plasma to corpuscles. I conclude that the variations observed by Drs. Fletcher and Peden are due to this tendency for the hæmatocrit to rise during convulsions, a rise which simply represents swelling of red corpuscles exposed to a falling pH, and which may be dismissed as a mere consequence of the convulsion.



In passing, I should like to point out that the loss of extracellular body fluid during convulsions was first described, not by myself as Drs. Fletcher and Peden imply, but by Gamble and Hamilton (Bull. Johns Hopkins Hosp., 1927, xli., 389).

The second paper, by Drs. Clegg and Thorpe, confirms earlier American claims that the combined administration of pitressin and water to provoke convulsions may sometimes be useful in the diagnosis of epilepsy. I think it should be pointed out, however, that the test is not free from danger. In one case reported by McQuarrie (Amer. Jour. Dis. Child., 1929, xxxviii., 451) this procedure precipitated (or at least was immediately followed by) status epilepticus, from which the patient was only rescued by the prompt use of diuretics. Foerster has shown that fits can be provoked in the epileptic by voluntary overbreathing (Deut. Zeits. f. Nervenheilk., 1924–25, lxxxiii., 347). Perhaps this would prove a simpler and safer alternative to the pitressin-water test.

I am, Sir, yours faithfully,

F. B. BYROM.

Bernhard Baron Institute of Pathology,
London Hospital, E., June 18th.

ST. VINCENT'S ORTHOPÆDIC HOSPITAL, EASTCOTE.—This institution under the charge of the sisters of St. Vincent de Paul proposes to rebuild the old wards and the operating theatre at a cost of £25,000. During 25 years at Eastcote, in Middlesex, over 16,000 cases have been received. The average stay of a patient is over one and a half years.

Primary Fellowships.—Anatomy: Mr. Grant Massie, Mr. P. N. B. Odgers, Prof. H. H. Woollard, and Prof. R. B. Green. Physiology: Prof. G. A. Buckmaster, Dr. D. H. de Souza, Prof. Samson Wright, and Prof. Hamilton Hartridge.

Diplomas of L.R.C.P., M.R.C.S.—Elementary Biology: Mr. G. P. Mudge, Mr. C. C. Hentschel, Mr. A. J. Grove, and Mr. W. A. Cunnington, D.Sc. Anatomy: Mr. E. P. Stibbe, Prof. Lambert C. Rogers, and Dr. A. J. E. Cave. Physiology: Prof. A. St. G. J. McC. Huggett, and Prof. Samson Wright. Midwifery: Mr. L. Carnac Rivett, Mr. Malcolm Donaldson, Mr. A. C. Palmer, and Mr. Victor Lack. Pathology: Mr. C. E. Shattock, Mr. Robert Davies-Colley, Prof. James McIntosh, and Prof. William Bulloch.

Diploma in Public Health.—Part I.: Prof. C. C. Okell. Part II.: Dr. James Fenton.

Diploma in Tropical Medicine and Hygiene.—Colonel W. P. MacArthur and Dr. G. Carmichael Low.

Diploma in Ophthalmic Medicine and Surgery.—Part I.: Mr. C. Bernard Goulden and Mr. Leighton Davies. Part II.: Mr. R. Foster Moore.

Diploma in Psychological Medicine.—Dr. F. L. Golla.

Diploma in Laryngology and Otology.—Part I.: Mr. E. Musgrave Woodman and Mr. Sydney Scott. Part II.: Mr. T. B. Layton.

Diploma in Medical Radiology.—Part I.: Prof. J. M. Woodburn Morison. Part II.: Dr. J. H. D. Webster.

Diploma in Anæsthetics.—Dr. H. E. Gaskin Boyle.

The following hospitals were approved, with the posts specified, for recognition for the six months' surgical practice, required of candidates for the final examination for the fellowship.

England.—Birkenhead General Hospital (senior house surgeon); St. Luke's Hospital, Bradford (2 house surgeons); Royal Infirmary, Chester (3 house surgeons); Chesterfield and North Derbyshire Royal Hospital (resident surgical officer and 3 house surgeons); Coventry and Warwickshire Hospital (4 house surgeons); Derbyshire Royal Infirmary (for one year, 3 senior house surgeons); Dewsbury and District General Infirmary (first house surgeon); Herefordshire General Hospital (resident medical officer); East Suffolk and Ipswich Hospital (first and second house surgeons); Mill-road Infirmary, Liverpool (senior resident surgical officer); Walton Hospital, Liverpool (senior resident assistant medical officer for surgery); National Temperance Hospital, London (resident medical officer and 1 house surgeon); Northampton General Hospital (temporary recognition, 2 house surgeons); North Staffordshire Royal Infirmary, Stoke-on-Trent (for one year, 3 house surgeons); Royal Albert Edward Infirmary, Wigan (resident surgical officer and first house surgeon).

Abroad.—The General Hospital, Adelaide (house surgeons); The General Hospital, Auckland (house surgeons); Christchurch Hospital (house surgeons); Dunedin Hospital (house surgeons); Melbourne Hospital (house surgeons); Alfred Hospital, Melbourne (house surgeons); St. Vincent's Hospital, Melbourne (house surgeons); Perth Hospital (house surgeons); Sydney Hospital (house surgeons); Prince Alfred Hospital, Sydney (house surgeons); St. Vincent's Hospital, Sydney (house surgeons: and The General Hospital, Wellington (house surgeons).

Royal Faculty of Physicians and Surgeons of Glasgow

The following have been admitted to the fellowship of the faculty:—

David Fyfe Anderson, M.B. (Glasgow); Christian Melville Fleming, M.D. (Glasgow); Evelyn McPherson, M.D. (Glasgow); Ian Scott Smillie, M.B. (Helensburgh); and Frank Lyth, L.M.S.S.A. (Manchester).

University of Bristol

At recent examinations the following candidates were successful:—

M.D.

J. F. Coates (with distinction), H. F. M. Finzel, and J. P. P. Stock.

FINAL EXAMINATION FOR M.B., CH.B.

Section I. (including Forensic Medicine).—R. D. Cæsar, Coralie W. Rendle-Short, and Paul Zimmering, and Centa Alkan and Ursula G. Hewitt (in Section I. only).

Section II.—Kathleen G. Brimelow and S. D. Loxton (with second class honours); F. C. Collingwood, A. E. Jowett, Broughton Ridgway, and A. W. Woolley.

B.D.S.

J. W. E. Snawdon (with second class honours).

L.D.S.

R. E. Buchan, J. G. Clancy, B. E. Ffrench, Frances M. Orton, D. E. Royal, and L. E. Scull.

University of Sheffield

Dr. Francis Davies, reader in anatomy in the University of London, at King's College, has been appointed professor of anatomy in succession to Prof. C. J. Patten, who is retiring.

Dr. Davies received his medical education at University College Hospital, taking the conjoint qualification in 1922, and [illegible] 1924. Two years later he took his M.D. [illegible] of science. After a resident appointment at University College Hospital he became senior demonstrator and research worker in anatomy at University College, and in 1932 he was awarded the Symington prize for anatomy. His contributions to medical journals include papers on normal cholecystography, the conducting system of the avian, and monotreme heart and the pathology of papillœdema.

University of London

At a meeting of the senate on June 12th Mr. H. L. Eason, C.B., C.M.G., superintendent and senior ophthalmic surgeon of Guy's Hospital, was elected vice-chancellor for the year 1935–36.

University of Edinburgh

Dr. Chalmers Watson, physician to the Edinburgh Royal Infirmary, has been nominated as a candidate for the post of Lord Rector, the other nominees being the Marquis of Clydesdale, Lord Allenby, Mr. Christopher Grieve, and Mr. W. B. Yeats. The election will take place early in the autumn term.

St. Thomas's Hospital Medical School

Lord Wakefield will distribute the prizes at this school on Tuesday next, June 25th, at 3 P.M., in the governors' hall.

Central Council of Recreative Physical Training

This council has just been formed, with the cordial coöperation of the Board of Education, in order to bring together representatives of the various bodies interested in the welfare of the country's youth, and to make a survey of the facilities for recreative physical training for adolescents, men and women in the British Isles. Lord Astor is the president, and the medical members will include Lady Barrett, Sir Henry Brackenbury, Dr. Anna Broman, Sir Farquhar Buzzard, Dame Janet Campbell, Dr. Veitch Clark, Sir Louis Greig, Lord Horder, Sir W. Arbuthnot Lane, Sir Walter Langdon-Brown, Dr. Louisa Martindale, Lord Moynihan, and Sir George Newman. With data obtained from the survey it is intended to assist the trustees of the King George's Jubilee Trust, by submitting definite proposals for the coördination and development of recreative physical activities of young people of post-school age. It is hoped that a central body will be able to widen the activities of organisations already in existence, without in any way interfering with their individuality, and so help to extend the benefits of physical education and recreation to the thousands who have not yet been drawn into any scheme. The organising secretaries of the council are Mr. H. A. Cole (chief organiser of physical training, Sheffield) and Miss P. S. Colson (Ling Association). A temporary office has been opened at 11, Doughty-street, London, W.C.1.

Harveian Society of London

On June 13th members dined together at Merchant Taylors' Hall with comfort and dignity made possible by Sir Buckston Browne's munificence. Lord Palmer, who proposed "The Society" in a strain of happy congratulation ("still going strong" at well over a hundred, he said), left the president, Mr. L. E. C. Norbury, to give the material evidence of prosperity. Twenty-four new members last year, said Mr. Norbury, making a total ordinary membership of four hundred, not including 12 honorary members of whom seven were with them that night. He expressed keen regret that the society still had no home of its own; here was a chance for another benefactor. He also made a plea for wiping out the remaining deficit on the Harvey tower of Hempstead Church. Two earlier presidents of the society took the opportunity of offering gifts. Dr. Hope Gosse, president in 1934, placed on the table a bust in bronze done by his nephew of Sir Buckston Browne, and Lieut.-Colonel E. L. Gowlland, president in 1933, a copy of Rembrandt's "Anatomy Lesson" (possibly the work of the artist himself) left to him by his cousin the late Mr. Peter Gowlland, F.R.C.S., and a wonderful malacca cane containing all kinds of gadgets—lancet, catheters, hypodermic syringe—given by some Indian worthy to Sir Warren Crooke-Lawless when he was surgeon to the Viceroy. These gifts, as well as Sir Buckston Browne's picture of Harvey explaining the circulation to Charles I., emphasised the president's plea for a worthy house in which to place them. The toast of "The Visitors" was proposed by Mr. A. E. Webb-Johnson with precisely the proper combination of eulogy and malice, and response was made by the Very Rev. W. R. Matthews, Dean of St. Paul's, Dr. J. O. Wakelin Barratt, Deputy-master of the Apothecaries, and Sir Henry Curtis Bennett, K.C. The precincts of the hall, thrown open to the diners by permission of the court, made an agreeable background for social intercourse up to a late period of the night.

Royal East Sussex Hospital

A new pathological laboratory is to be built at this hospital at a cost of £6000. Ordinary expenses during the last year exceeded ordinary income by £1241.

Addenbrooke's Hospital, Cambridge

It has been decided to enlarge and improve the casualty department at this hospital, which is now too small for the greatly increased number of cases. The enlargement of the ear, nose, and throat department is also under consideration.

London Jewish Hospital

An appeal for £100,000 was to have been issued on behalf of this hospital, but on the advice of King Edward's Fund it has been decided at present to appeal for only £60,000. The present nurses' home is out of date and a new one is urgently needed. 28 per cent. of the patients are non-Jews.

St. Albans Hospital

The contributory scheme of this hospital is progressing well and there are now 7000 members. But the district is enlarging rapidly and the hospital's expenses accordingly. The accident cases present a problem and cause a great strain upon the accommodation.

Out-patient Time-table at Voluntary Hospitals

This time-table, sent out periodically by the King Edward's Hospital Fund for London, has now been revised to May, 1935. In this issue addresses of hospitals have been included as well as telephone numbers. The hope is expressed that this detailed list of hours and days for first attendance of new out-patients will facilitate the consultative use of hospital out-patient departments and reduce the period during which patients have to wait. Copies may be obtained free on request from the publishers, Messrs. Geo. Barber and Son, Ltd., Furnival-street, London, E.C.4.

Royal Medico-Psychological Association

The ninety-fourth annual meeting of this association will be held from July 3rd to 5th at 11, Chandos-street, W., and the Guildhall, Westminster, under the presidency of Dr. Reginald Worth. Dr. Worth has chosen as the title of his presidential address Four Decades of Psychiatry. Among those who will read papers are Dr. Thomas Power (modern endocrinology and mental disorder), Dr. H. C. Beccle (recent investigations in the hæmatology of the psychoses), and Dr. W. D. Nicol (clinical aspects of G.P.I.). The secretary of the association may be addressed at Springfield Hospital, London, S.W.17.

Royal Sussex County Hospital, Brighton

A festival dinner was held at the Royal Pavilion, Brighton, on June 14th, to inaugurate an appeal for £60,000 in order to provide 100 more beds. The chairman of the board of management, Brigadier-General d'A. C. Brownlow, presided. Lord Horder, in proposing the toast of the hospital, expressed particular pleasure at meeting again so many of his old pupils on its staff. He paid tribute to "this thoroughly up-to-date general hospital, a piece of machinery which ticked over noiselessly and efficiently," and welcomed the fact that within its walls there were none of those cliques or stunts which did so great a disservice to medicine. For a town of 257,000 inhabitants a hospital with only 250 beds was wholly inadequate. The chairman in response said that during the last 21 years the governor had spent over £104,000 in equipment and buildings. He announced that in donations and promises the sum of £5489 had already been received. After the Dean of Chichester and Mr. Francis Donne had spoken, Dr. Donald Hall proposed the toast of the guests. Of Lord Horder he said that his care for humanity, both living and dead, was proved by the fact that he was president of both the Anti-Noise League and the Cremation Society. Mr. J. H. Thomas, M.P., in reply, poked fun impartially at hosts and guests whose efforts to arouse enthusiasm for the appeal he affected to despise, and ended on a more serious note with a spirited defence of the voluntary hospital system and of the value of voluntary service as opposed to compulsion.

The New Poisons Code

The Home Office gives notice that the rules under Section 23 of the Pharmacy and Poisons Act, 1933, will come into force on May 1st, 1936, the date on which the relevant sections of the Act come into operation. On that date the various existing statutory provisions and regulations relating to the sale, supply, storage, and transport of poisons will be repealed. Copies of the poisons list and rules may be obtained from H.M. Stationery Office, price 8*d*.

Sheffield Royal Hospital

A convalescent home with accommodation for 48 patients is to be built for this hospital with funds provided by the Zachary Merton trust. The cost of the site, building, and equipment is being met by the trust, and it is thought that the convalescent funds of the hospital will be sufficient to bear the cost of maintenance.

Mansfield Hospital

An appeal is being made by this hospital for £40,000 to extend the institution. It is hoped to build two new wards and to provide additional nursing and domestic accommodation. Various colliery firms have already responded generously and over £3500 has been already received.

Derbyshire Royal Infirmary

The largest donation ever received by this institution has been given by members of the family of the late Mr. Samuel Gee, of Duffield, who have contributed £20,000 to the hospital for the building of a new block to be known as the Gee block.

Lady Tata Memorial Scholarships

The trustees of the Lady Tata memorial fund have awarded scholarships for 1935–36 to Dr. M. C. G. Israëls (Manchester), Dr. O. Kaalund- Jörgensen (Aarhus); and grants to Prof. W. Büngeler (Danzig), Dr. J. Engelbreth-Holm (Copenhagen), Dr. Karl Hinsberg (Berlin), Dr. Ch. Oberling (Paris), Prof. Eugene Opie (New York), and Dr. Lucy Wills (London). These awards were open to graduates of any nationality, for research work in diseases of the blood, with special reference to leukæmia.

British Red Cross Clinic for Rheumatism

The annual report for 1934 of the British Red Cross Society shows continued expansion in all sections of the Society's work. During the year there were 98,656 attendances for treatment at its clinic for rheumatism (Peto-place, London, N.W.), an increase of 4400 over 1933. Of the patients treated 45·6 per cent. were discharged completely cured or free from symptoms, 36·1 per cent. were definitely improved, and 17·1 per cent. were unchanged or slightly improved. Only 1·2 per cent. were worse after discharge. The clinic has now completed five years' work but is faced with a substantial deficit each year, and the proceeds of the annual Red Cross ball, to be held at Grosvenor House on Nov. 27th, will go to its support.

International Congress on Life Assurance Medicine

This congress will meet at the offices of the Prudential Assurance Company (142, Holborn Bars, London, E.C.) from July 24th–26th. On July 23rd, at 10 P.M., there will be a government reception at Lancaster House, London Museum, St. James's, at which the Minister of Health will receive the guests. The next morning the congress will be formally opened by the president, Sir Walter Langdon-Brown. Dr. Josef Sturm (Munich) and Dr. Chester T. Brown (Newark, N.J.) will open a discussion on methods of estimating risks, while in the afternoon Dr. Etienne May and Dr. Jean Ollivier (Paris) and Prof. L. Winternitz (Trieste) will speak on the prognosis of hypertension. Other subjects that will be discussed during the meeting include: the acceptance of glycosurics (Sir Walter Langdon-Brown, Prof. Hijmans van den Bergh, and Prof. de Langen); gastro-duodenal ulceration and life assurance (Prof. I. Romanelli, Dr. Faroy, and Dr. Carrié); health service and life assurance (Dr. Samuel B. Scholz, Junr., and Dr. Otto Neustätter). The last session of the congress will be devoted to a varied programme of short papers. The hon. secretary, Dr. Otto May, should be addressed at 142, Holborn Bars, E.C.1.

TWO NEW MEDICAL DIPLOMAS

THE first examinations for the diplomas in child health (D.C.H.) and in anæsthetics (D.A.) recently instituted by the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England will be held respectively on Oct. 4th, 1935, and Nov. 8th, 1935. Forms of application for admission may be obtained from the secretary, Examination Hall, 8, Queen-square, London, W.C.1, and must be completed and returned at least 21 days before the examination.

Diploma in Child Health.—The regulations state that the examination (written, oral, and clinical) will comprise the following subjects, special emphasis being laid on their preventive aspects.

(*a*) Anatomy, physiology and pathology of childhood; (*b*) development of the child, physical and mental, including speech, with their disorders; physical education in childhood; (*c*) the hygiene and dietetics of infancy and childhood; (*d*) affections of the newborn; (*e*) disease in infancy and childhood, medical and surgical; (*f*) therapeutics of infancy and childhood, including remedial treatment, physical and mental; (*g*) legislation and public administration in regard to the care of children, including the methods of infant welfare centres and of the school medical service.

The candidate must have been in a recognised children's hospital or department as a resident medical officer for six months or as a clinical assistant for a year, though these conditions may be modified at the discretion of the committee of management in the case of candidates who have carried out original research or whose studies and practice have extended over a long period without fulfilling the exact conditions.

Diploma in Anæsthetics.—The regulations for this diploma are summarised in a leading article (p. 1451). A footnote states that until May 1st, 1938, it shall be open to the Royal Colleges, on the recommendation of the committee of management of the examining board, to grant the diploma, without examination, to an anæsthetist to a general hospital associated with a recognised medical school in the British Empire who has held this appointment for not less than ten years. The fee for such diploma is six guineas, the same as for either of the new diplomas taken by examination.

Appointments

MacDonald, E. K., M.D. Lond., D.P.H., has been appointed Medical Officer of Health, Leicester.

Peirce, G. E. Graves, M.B. Lond., F.R.C.S., Surgical Registrar to the London Lock Female Hospital.

Stringer, W. I. B., M.D. Toronto, Resident Medical Officer to the Royal Northern Hospital.

Trevor, David, M.S. Lond., F.R.C.S. Eng., Hon. First Assistant to the Orthopædic Department of the Charing Cross Hospital.

Woodruff, Keith, M.B. Lond., Hon. Anæsthetist to the Charing Cross Hospital.

Royal National Sanatorium, Bournemouth.—The following appointments are announced:—

- **Smith, S. Watson**, M.D., F.R.C.P. Edin., M.R.C.P. Lond., Physician in Bournemouth;
- **Maxwell, James**, M.D., F.R.C.P. Lond., Physician in London;
- **Adeney, N. F.**, M.B. Camb., F.R.C.S. Eng., Surgeon; and
- **Coles, A. C.**, M.D. Edin., M.R.C.P. Lond., Consulting Physician.

Certifying Surgeons under the Factory and Workshop Acts: Dr. C. P. **Porter** (Kidderminster, Worcestershire); Dr. G. S. **Lawrence** (Bewdley, Worcestershire).

Medical Referee under the Workmen's Compensation Act, 1925: Dr. J. F. **Dick**, of Northwich, for the Altrincham, Warrington, and Northwich County Court Districts (Circuit No. 7).

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hospital.—H.S. £150.

Barnsley, Beckett Hospital and Dispensary.—H.P. £200.

Beckenham, Bethlem Hospital, Monks Orchard.—Res. H.P. At rate of £150.

Belfast, Joint Nursing and Midwives' Council.—Examiners.

Birmingham, Monyhull Colony Certified Institution.—Jun. Asst. M.O. £350.

Birmingham, Salterly Grange Sanatorium, near Cheltenham.—Med. Supt. £750.

Birmingham University, Dept. of Industrial Hygiene and Medicine. Research Worker and Lecturer. £600.

Bolton Royal Infirmary.—Hon. Physician for Diseases of the Skin. £100. Also two H.S.'s. Each £125.

Bristol Royal Infirmary.—H.S. to Ear, Nose, and Throat Dept. At rate of £80.

Burton, Devonshire Royal Hospital.—H.P. Also Asst. H.P. At rate of £200 and £150 respectively.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency O. Also H.S. At rate of £130.

Canterbury, Kent, and Canterbury Hospital.—H.S. At rate of £125.

Central London Throat, Nose, and Ear Hospital, Gray's Inn road. W.C.—Hon. Asst. Anæsthetist. Also Third Res. H.S. At rate of £75.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall.—H.P. At rate of £150.

Chester Royal Infirmary.—H.S. At rate of £150.

Chesterfield and North Derbyshire Royal Hospital.—H.S. to Ear, Nose, and Throat and Eye Depts. At rate of £150.

Children's Hospital, Hampstead, N.W.—Asst. Ear, Nose and Throat Surgeon.

Colchester, Essex County Hospital.—Asst. H.S. £120.

Coventry and Warwickshire Hospital.—H.S. for Aural and Ophth. Depts. At rate of £125.

Derbyshire Hospital for Sick Children.—Res. H.S. At rate of £130.

Doncaster Royal Infirmary.—H.S. to Eye and Ear, Nose, and Throat Depts., Cas. H.S. Also H.S. Each £175.

Dreadnought Hospital, Greenwich, S.E.—H.P. At rate of £110.

Dulwich Hospital, East Dulwich-grove, S.E.—H.P. At rate of £120.

East London Child Guidance Clinic, Upper Woburn-place, W.C.—Hon. Asst. Psychiatrist.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Res. Obstet. Asst. At rate of £50.

Folkestone, Royal. Victoria Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £120 respectively.

Gateshead Mental Hospital.—Asst. M.O. £500.

Great Yarmouth General Hospital.—H.S. £140.

Harrogate Royal Bath Hospital.—Res. M.O. £156.

Hastings, Royal East Sussex Hospital.—Hon. Asst. Physician.

Hertford County Hospital.—H.P. At rate of £150.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100. Also Asst. Physician.

Hull Royal Infirmary.—H.S. to Ophth. Ear, Nose and Throat Depts. At rate of £150.

Ilford Borough Education Committee.—Asst. School Dental Surgeon. £450.

Liverpool, Alder Hey Children's Hospital.—Res. Asst. M.O. £200.

London University.—External Examinerships.

Macclesfield General Infirmary.—Second H.S. At rate of £150.

Maidstone, Kent County Ophthalmic and Aural Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £200.

Maidstone, West Kent General Hospital.—H.S. £150.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S. At rate of £150.

Manchester, Royal Children's Hospital, Pendlebury.—Res. M.O. At rate of £125.

Manchester Royal Infirmary.—Res. Clin. Pathologist. £100.

Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.

Marie Curie Hospital, 2, Fitzjohn's-avenue, N.W.—Res. M.O. At rate of £100.

Market Drayton. Cheshire Joint Sanatorium.—Locum. Six guineas per week.

Mile End Hospital, Bancroft-road, E.—Asst. M.O. £350.

Newport, Isle of Wight County Mental Hospital.—H.P. At rate of 150 guineas.

Paddington Hospital, Harrow-road. W.—Asst. M.O. £350.

Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. O. At rate of £175.

Preston and County of Lancaster Queen Victoria Royal Infirmary. Special H.S. At rate of £150.

Preston, Sharoe Green Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £200 and £100 respectively.

Prison Medical Service.—M.O., Class II. £515 18s.

Queen Mary's Hospital for the East End, E.—Two Cas. and Out-patient Officers. Each at rate of £150.

Rainhill County Mental Hospital.—Asst. M.O., Locum Tenens. 7 guineas per week.

Reading, Royal Berkshire Hospital.—H.S. Also Cas. O. Each at rate of £125.

Rochester, St. Bartholomew's Hospital.—Cas. and Orthopædic H.S. At rate of £175.

Royal Air Force.—Commissions.

Royal College of Surgeons of England.—Examiner in Dental Surgery

Royal Free Hospital, Grays Inn-road, W.C.—Med. Reg. £100.

Royal National Orthopædic Hospital, Great Portland-street, W.—H.S. for Country Branch. At rate of £150.

Royal Naval Medical Service.—Nine M.O.'s.

St. Bartholomew's Hospital Medical College.—Helen Cave Memorial Scholarship. £200.

St. Leonard's-on-Sea Buchanan Hospital.—Hon. Physician.

St. Paul's Hospital for Diseases of the Genito-Urinary Organs and Skin, Endell-street, W.C.—H.S. At rate of £150.

Salford Royal Hospital.—H.S. At rate of £125.

Salisbury General Infirmary.—Res. M.O. £250.

Sheffield Royal Infirmary.—Two H.S.'s. One H.P. Aural H.S. Ophth. H.S. Asst. Cas. O. Each at rate of £80. Also Clin. Asst. to Radiological Depts. £300.

Sheffield University, Dept. of Pharmacology.—Lecturer in Pharmacology. £500.

Shrewsbury, Royal Salop Infirmary.—Two Res. H:S.'s. Each at rate of £160.

South London Hospital for Women, Clapham Common, S.W.—Clin. Asst.

Southampton, Borough General Hospital.—Jun. Res. M.O. £200.

Stafford, Staffordshire General Infirmary.—H.P. and Cas. O. At rate of £150.

Stirling District Mental Hospital, Larbert.—Jun. Assist. M.O. £300.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Orthopædic H.S.

Swansea General and Eye Hospital.—H.S. At rate of £150.

Tunbridge Wells, New Kent and Sussex Hospital.—Jun. H.S. £150.

Wigan, Royal Albert Infirmary and Dispensary.—H.S. At rate of £150.

Willesden General Hospital, Harlesden-road, N.W.—Hon. Clin. Assts. for Out-Patient Dept. Also Hon. Surgeon.

Winchester, Royal Hampshire County Hospital.—Hon. Surgeon In Ordinary.

Worksop Victoria Hospital.—Sen. H.S. At rate of £150.

The ctories announces vacancies for
ons at Carmarthen (Carmarthen-
Hertfordshire); Ripley (Surrey);

Births, Marriages, and Deaths

BIRTHS

DUKE.—On June 15th, the wife of J. H. Duke, M.B. Belf., Langbourne Mansions, N., of a daughter.

LEAVER.—On June 9th, at Palace-court, W., the wife of R. H. Leaver, M.R.C.S. Eng., of a daughter.

MOONEY.—On June 9th, the wife of A. Craig Mooney, M.B. Liverp., of Plymouth, of a daughter.

SPICER.—On June 2nd, at Kampala, Uganda, the wife of J. R. Spicer, M.B. Lond., Uganda Medical Service, of a daughter.

TOWNSEND.—On June 12th, at Welbeck-street, W., the wife of C. Geoffrey Townsend, M.B. Camb., of a son.

WHITAKER.—On June 14th, in London, the wife of Allen Whitaker, M.B. Lond., Guildford, of a daughter.

MARRIAGES

DINGWALL—WOODHAM.—On June 8th, at St. Nicholas Church,
Cranleigh, Surg. Lt. Ronald Aberd.,
R.N., to Elizabeth Woodham te Capt.
Charles Burnett Woodham, rnwall's
Light Infantry, and of Mrs. Surrey.

HARDY—WATSON.—On June 15t Church,
Thomas T. Hardy, B.M., B.Ch. Oxon., son of Dr. and Mrs. T. M. Hardy, West Byfleet, Surrey, to Mollie Ursula, youngest daughter of Mr. and Mrs. Gerald P. Watson, Pynford, Surrey.

MCCRAE—FRANKLING.—On June 15th, at St. John de Sepulchre, Norwich, Dr. Ian Bruce McCrae, of Johannesburg, to Muriel Burton Frankling, of Norwich.

WARD—KERSHAW.—At St. Mary's Church, Knighton, Leicester, on June 14th, by the Rev. Canon Matthews, Dr. Gerald Ward, M.A., M.B. Cantab., younger son of Mr. and Mrs. Ernest Ward of Knighton Rise, Leicester, to Marjorie, only daughter of Mr. and Mrs. C. R. Kershaw, of Knighton-road, Leicester.

DEATHS

DOUGLAS.—On June 12th, at Harold-road, Norwood, S.E., John J. Douglas, M.D., F.R.C.P. Edin., D.P.H., aged 69.

FULLER.—On June 14th, Courtenay James Fuller, M.R.C.S. Eng., of Plumstead, S.E., aged 75 years.

MACKENZIE.—On June 13th, at Ryde, I.W., Kenneth Walter Ingleby Mackenzie, M.R.C.S. Eng.

THOMPSTONE.—On June 12th, suddenly, at St. Saviour, Jersey, Sydney Wilson Thompstone, C.M.G., F.R.C.S. and P. Edin., late P.M.O., Northern Nigeria.

TROUT.—Joseph Henry Ensor, L.R.C.S., L.R.C.P., aged 71, at "Lullington," Edgbaston, Birmingham, on June 14th.

WILSON.—On June 14th, at a London nursing-home, James Wilson, M.D. Aberd., of Stonehill-road, East Sheen, S.W., and late of Goldhawk-road, Shepherds Bush.

WRIGHT.—On June 10th, at Hoveton St. John, near Norwich, Bernard Duncan Zorapore Wright, M.R.C.S. Eng., aged 72.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

WORCESTER ROYAL INFIRMARY.—The death-watch beetle has caused havoc in the wood-work of the older buildings at this hospital, and the cost of renovating the floors and ceilings will be £11,000. Last year there was an excess of expenditure over income of £2847 compared with over £3000 in 1933. The income from the contributory scheme has again increased and the total number of contributors in city and county is estimated at 30,000.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, June 25th.
Pathology. 8.15 P.M. for 8.30 P.M. Summer Meeting at the Wellcome Museum of Medical Science, 183, Euston-road, N.W. (Dr. S. H. Daukes.)
SATURDAY.
Disease in Children. Meeting in Cardiff by invitation of Dr. A. G. Watkins.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.
THURSDAY, June 27th.—6.30 P.M. (Adolph Tuck Hall, Woburn House, Upper Woburn-place, W.C.), Annual General Meeting. 7.30 P.M., Dinner. 8.30 P.M., Mr. Dan Frankel: The Future of the Municipal Medical Service.

MEDICO-LEGAL SOCIETY.
THURSDAY, June 27th.—8.15 P.M. (11. Chandos-street, W.), Annual General Meeting. Mr. Everard Dickson and Dr. Gerald Slot: Questions of Drunkenness in the Courts.

BRITISH PSYCHOLOGICAL SOCIETY.
Medical Section.
WEDNESDAY, June 26th.—8.30 P.M. (36, Gloucester-place, W.), Dr. W. Clifford M. Scott: Some Apparent Disturbances of Reality due of Ideas of Omnipotence—with special reference to Disturbed Ideas about Time.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.
WEDNESDAY, June 26th.—5.30 P.M. (1, Wimpole-street, W.), Lord Horder: Pruritus. (Prosser White oration.)

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.
THURSDAY, June 27th–29th.—Annual Conference at Southport.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Thornhaugh-street, W.C.
Fever Hospital Medical Services Group.
FRIDAY, June 28th.—4.30 P.M., Dr. G. Ronaldson: Observations on the Pathogenesis of Diphtherial Paralysis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, June 24th, to SATURDAY, June 29th.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.
All-day course in medicine,
—NATIONAL HOSPITAL FOR
Westmoreland-street, W.1.
(Open to all.)—Courses and clinics arranged by the Fellowship are open only to members and associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, June 27th.—2 P.M., Mr. Denis Browne: Talipes. 3 P.M., Dr. W. W. Payne: Nephritis from the Laboratory Aspect.
Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

CENTRAL LONDON, THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY, June 24th, to FRIDAY.—4.30 P.M., Course in Methods of Examination and Diagnosis.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, June 27th.—3 P.M., Dr. W. G. Wyllie: Demonstration.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
MONDAY, June 24th, to FRIDAY.—First week of Intensive Course.

INSTITUTE OF CHILD PSYCHOLOGY.
WEDNESDAY, June 26th.—6.15 P.M. (Friends House, Euston-road, N.W.), Dr. Ethel Dukes: Phases of Development. 8.15 P.M., Dr. Margaret Lowenfeld: Comedy and Tragedy in Play.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.
WEDNESDAY, June 26th.—3 P.M., Dr. H. Crichton-Miller: Summary. 4.30 P.M., Dr. Cedric Shaw: Summary.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY, June 26th.—3 P.M., Visit to Buckston Browne Research Farm, Downe, Kent. (Sir Arthur Keith and Mr. Laurence O'Shaughnessy).

UNIVERSITY OF BIRMINGHAM.
TUESDAY, June 25th.—3.30 P.M. (General Hospital), Mr. Beatson Hird: Demonstration of Ophthalmic Cases.
FRIDAY.—3.30 P.M. (Children's Hospital), Dr. J. M. Smellie: Demonstration of Cases.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.
SUNDAY, June 23rd.—10.30 A.M. (Newcastle General Hospital) Mr. D. R. MacGregor: Clinical Demonstration.

NOTES, COMMENTS, AND ABSTRACTS

THOMAS BENTLEY

PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS

BY R. R. JAMES

MUNK thought that Thomas Bentley must have died between the years 1531 and 1541, because his death is not recorded in the college annals and the records for those ten years are defective. He notes the fact that he was thrice president of the College and that his name is not in the list of elects for 1541, but he omits to state that Bentley was physician to Henry VIII. and to Edward VI.

I am in a position to supplement Munk's brief account of Bentley. It is almost certain that he was a member of a Warwickshire family branches of which owned property at Kineton and Stratford upon Avon; but he was probably a son of Geoffrey Bentley, of Woodstock, and was born c. 1485. After taking his M.D. Oxon., in 1518, he was physician to the Duke of Buckingham. The latter was executed in 1521, but his physician does not appear to have been accused of participation in the high treason for which Buckingham suffered.

He was at Oxford at the time, for I find that on April 20th, 1521, he received an acquittance for property given to the University of Oxford by John Thorne, late Abbot of Reading. He was for a time Fellow of New College. His wife's surname is unknown, but her christian name was Anne. While in Oxford they lived in one of the George Halls, possibly in St. Mary's parish. In the same year (1521) Dr. Bentley, physician of Oxford, was sent for to Court. On the death of Linacre, in 1524, Bentley was appointed physician to Henry VIII. He resided in St. Botolph Without in "Alrichgate" (Aldersgate). In 1528 he was the recipient of a New Year's gift from the King. Previously, in 1525, the Canons of Holy Trinity let the demesne lands of the rectorial manor of Tottenham, with the great tithes, to Bentley for 40 years. Lee, Archbishop of York, in 1533, recommended him for the manor of Stockwell, saying that "he is an old friend of mine and a right honest man." At about this time he was unfortunate in having his house burgled by a woman named Margaret Maxeborne; and the odd thing is that the lady in question received a Royal pardon, dated at Greenwich, in May, 1533.

Bentley received a salary of £10 a quarter from 1528 to 1547 and his servant had a New Year's gift from the King in 1538 and 1540. On Jan. 10th, 1544–45 he let his property in Oxford, by charter, to Harman Evans, bookseller. It must have been at about this time that Bentley retired to Stratford upon Avon, for he certainly added to his property there in 1546. He rented, from Squire Clopton, the Great House for 40 years. This house was later known as New Place and was the residence of William Shakespeare.

Bentley died, probably early in 1549 and was buried in the church at Stratford upon Avon. The following is an abstract of his will.

(P.C.C. Cood, 6). 26 Jan., 1548. Thomas Bentley, of Stratford upon Avon, Co. Warwick. Dr. of Physick to the late King Henry VIII. Soul to God. Body in the parisshe churche of Stratford. To wyfe Anne my best standinge cuppe of sylver and gylte wt the couer, a neste of goblettes of syluer & gylte wt the couer, my beste salte wt his couer, syx pottes of syluer & gylte wt their couers and all my syluer spones, wt all my fuelles and all my right tytle and interest and terme of yeres that I have of and in my house in Oxford called George Hall together wt the indenture of the same house wt certeyn ymplementes therein remaynynge as Standerth, whiche house is now in the tenure of Harman Evans. Item I bequeath to my sonne William Bentley my seconde beste standynge cuppe of syluer and gylte wt the couer and a potte of syluer and gylte wt the couer. I bequeath to Anne Bentley my daughter my seconde beste syluer salte wt his couer, thre pottes of syluer and gylte wt their couers and a kowe orelles XXs. in money. To my daughter Dorothe Bentley my thirde salte of syluer and gylte wt his couer, a kowe and a calfe orelles XXs. in money. To Robert Wyncocke a syluer cuppe wt the couer. To William Clerke, whome I have brought upp of charitie, twoo heyfers when married. Residue to wife Anne, my sole executrix. Friends Thos. Blount[1] and Robt. Wyncocke, supervisors. The said Thomas to have a syluer potte for his pains. Wit. John Jeffries, Thos. Waturman, Laurence Seyton, Wm. Myns. Proved at London, 4 March, 1549.

Bentley's widow is said to have married a certain Richard Charnock. His son William married Anne Porter and died in Shropshire in 1547. Of his daughters, Anne married William Botterell,[2] of Aston Botterell, Salop, after her father's death. Dorothy was married, after her father's death to Roger Gifford, of Hillesden, Bucks; while Barbara, who is not mentioned in the will, married Thomas Raynsford, of Little Compton, Glos.

I am indebted to Mr. Harvey Bloom for the transcript of the will and to Mr. Frederick Wellstood, F.R.Hist.Soc., Librarian of Shakespeare's Birthplace for the loan of a privately printed brochure from which most of the above facts are abstracted.

The monotonous repetition of silver salts, cups, &c., with covers shows that Bentley must have made good the depredations of the burglar.

FOOTNOTES

[1] Thomas Blount may be a scion of the ancient Shropshire family of Blount, of Kinlet and Mawley Hall, though his exact relationship to Sir George Blount, whose monument in Kinlet Church is one of the finest Elizabethan monuments in the country, is not clear to me. He was possibly Thomas Blount, of Kidderminster, grandson of Sir John Blount, of Kinlet, who died in 1524. If so he was a cousin of Sir George.

[2] The Botterell family at Aston date from A.D. 1200. I know the place well as I was born and bred in the next parish a mile away. Like Hardy's D'Urbervilles the family fell on evil times and I think I am correct in stating that the last direct descendant died in very reduced circumstances about the middle of last century.

RADIOGRAMS WHILE YOU WAIT

WHEN a patient is referred to the X ray department much time is always wasted before films and reports are available. Most of this delay comes from the slow drying of films, and unless wet films are sent round the hospital—which means that they are often spoilt—the clinician is seldom able to see a radiogram of his patient until a later session. Dr. A. E. Barclay has tried to devise means of expediting the production of a dry film, and we have already given some account of observations communicated by him to the British Institute of Radiology last February. Those interested may now study his paper at leisure in the June issue of the *British Journal of Radiology*.

An X ray film has to be developed, fixed, washed, and dried. The first two of these processes take about five minutes each and cannot be speeded up, but Dr. Barclay shows that washing can certainly be accelerated. Provided that the washing tanks are small and the water is running fast and is not polluted by the introduction of more films from the fixing tank, a film can be perfectly washed and chemically pure in from three to five minutes. In the drying process two factors apparently play a part—namely, heat and draught. Although the gelatine on the films melts in solutions that reach a little over 100° F., it is found that a film can be dried in air at a temperature of 160° F., or even higher, if a strong draught is maintained. The explanation lies in the cooling caused by intense surface evaporation. With rapid drying there must, however, be no drops of water left on the surface—i.e., the moisture distribution must be even—or the unequal drying will give rise to water marks. To avoid this, Dr. Barclay puts the films through an ordinary household wringing machine with rubber rollers. Even with the maximum pressure obtainable, he says, no damage was done to the radiogram, and by using the wringer before drying some 30 to 40 per cent. by weight of the moisture could be eliminated. Under experimental conditions, he reports, films have been completely processed, with satisfactory washing and drying, within 15 minutes.

The need for a more rapid radiographic service is urgent, especially in the larger hospitals where patients are drawn from a wide area and cannot afford double travelling expenses—to say nothing of the waste of time of the clinician who has to review the case on the second visit. Even if an effective rapid drying machine were expensive, it might quickly pay for its cost if it enabled the clinician to deal effectively and finally with patients during one session. Apart from the possibility of damage, there is a psychological objection to the examination of wet films faute de mieux. The approach of the radiologist or the clinician to a wet, unfinished film tends to be casual, and he is less likely to examine it with the care for every detail which is a necessary part of routine.

SNAKE VENOM AS AN ANALGESIC

In a recent leading article we referred in passing to the use of snake venom in the relief of pain, and it is appropriate to recall a small series of cases of inoperable carcinoma thus treated which was described not long ago by H. R. Calderón (Semana méd., 1934, xli., 1109). Venom was first employed for this purpose, he says, by Monaelesser in 1930. In the present series the venom of the snake *Lachesis alternatus* was used because of its comparatively low content of hæmotoxin. Before any patients were treated the minimal toxic dose was worked out on rats, and the human dosage was calculated as one-tenth of the toxic dose. In rats the minimum toxic dose was found to be 0·375 mg. per kg., so that the dose administered to the patients was 0·0375 mg. per kg. The venom was administered either subcutaneously or intravenously. None of the 8 patients failed to obtain relief when it was given intravenously, but in 2 of them subcutaneous injections were ineffective. Calderón concludes that the venom is less potent, but also less hæmotoxic, than cobra venom, the period of analgesia lasting from 3 to 18 hours, which is considerably less, he thinks, than the period of relief given by cobra venom. Neither in the patients nor in rats inoculated with malignant tumours were any regressive changes detected in the growth.

In some respects this agrees with the experience of Jacques Lavedan, who has for some two years given injections of cobra venom to patients suffering from various forms of malignant disease (Bull. de l'Acad. de Méd., 1935, No. 5, p. 195). In 51 cases the treatment was continued systematically for at least four months, the cobra venom being introduced either directly into the new growth or at some distance from it, and, broadly speaking, nothing but failure was registered. It is true that considerable relief from pain ensued in some cases, but it could have been obtained more reliably and cheaply with morphia. Histological examination of the tumours supplied no reliable evidence that their vitality had been injured.

SUMMER TOURS

The Le Play Society organises holiday courses on which various aspects of the same region are considered and field studies from the point of view of archæology, art, architecture, geography, geology and botany, and sociology are made. The material collected on these tours is afterwards used for the publications of the society. The programme for this year includes a tour to Bulgaria for an economic and social survey, and a visit to the Caucasus. Other groups will go to Denmark and Sweden, where housing and social problems will be the special subject, and to Andorra, where it is planned to make an economic and geographical survey. At home, several centres have been chosen for work of differing types: a training course in survey methods will be held at Cranham in the Cotswolds, and survey of the Island of Lewis is being arranged for August. Full details can be obtained from Miss M. Tatton, the director of the society, at 58, Gordon-square, London, W.C. 1.

A NOTEBOOK FOR TRAVELLERS

The publishers of Twentieth Century Health and Pleasure Resorts have brought out a little book, 6½ by 4½ inches, condensing the information contained in the larger volume, along with hints to travellers, diagrams of routes, and a few essential details of European countries, how and where to travel in them, what to see and where to stay. At the end is a list of cure resorts, mountain homes and home schools for delicate children, sanatoria, bath resorts classified under the complaints for which they are usually recommended, schools and educational homes. The result is a booklet which can be carried in the pocket and cannot fail to be of assistance in some way to every class of traveller. The notes on why we travel, how to travel intelligently, what to do and not to do on the continent, contain a philosophy of travel from which even experienced travellers might benefit. It contains the names of nearly 2000 hotels, pensions, and other establishments and can be obtained price 1s. through Messageries Hachette or from the Anglo-Continental and International Publishing Offices, Lausanne—British agency at Warwick Chambers, Corporation-street, Birmingham.

NEW PREPARATIONS

Oleochrysine Lumière.—The Anglo-French Drug Co., Ltd. (11 and 12, Guilford-street, London, W.C.1), is placing on the market a new preparation entitled Oleochrysine Lumière, a product of the Lumière Laboratories at Lyons. The drug represents a departure in gold therapy; the new organic gold salt (calcium auro-thioglyceryl sulphonate) contains 35 per cent. gold and 4·53 per cent. calcium, is soluble in water but is supplied for therapeutic use as an oily suspension whereby its activity is prolonged. The therapeutic indications for the use of gold are known to be numerous, various pulmonary conditions improving under its absorption, while some of the symptoms of chronic rheumatism and certain skin diseases are benefited by its exhibition. The Lumière Laboratories, in enumerating the conditions for which oleochrysine may be found useful, point to the calcium content as increasing the tolerance to gold, the risk of unfortunate reactions being reduced to a minimum.

Messrs. Burroughs Wellcome and Co. announce that all "Wellcome" Brand Insulin is now made with pure crystalline insulin. It is claimed that this is the first commercial product to be so prepared.

The Denver Chemical Manufacturing Company has removed to Carlisle-road, London, N.W.9, and requests that all communications should now be sent to the new address.

Cottage Hospital Scheme.—Iver, Denham, and Langley Cottage Hospital hopes to build a new hospital in Widecroft Meadow, Iver, at a cost of over £10,000, and the site has been offered for the modest sum of £150. A new hospital is necessary, for during the last ten years out-patients' attendances have increased from 540 to 1836.

Corrigendum.—*Miss* M. Forrester Brown, M.S., was the author of the article on p. 1377 of our last issue.

ADDRESSES AND ORIGINAL ARTICLES

THE UNHAPPY COLON *

By Arthur F. Hurst, D.M. Oxon., F.R.C.P. Lond.
SENIOR PHYSICIAN TO GUY'S HOSPITAL, LONDON

No organ of the body is so misunderstood, so slandered, and so maltreated as the colon. Text-books of anatomy are apt to describe it as it is found in the dissecting-room, not as it occurs in a living man. Text-books of physiology describe its motor functions as seen under experimental conditions in animals, and rarely pay sufficient attention to the results of observations made on healthy human beings, and they ignore more or less completely its secretory functions. The colon is slandered every day in the advertising columns of the popular press, which accuse it of sins it never commits, and the mass suggestion which results from constantly reading about the disastrous effects of intestinal intoxication results in most of the lay public and many of the medical profession joining in these slanders. By promoting the sale of purgatives and encouraging the use of various other methods of irritating the colon, these slanders result in maltreatment. No wonder that the colon is unhappy.

Motor Functions of the Colon

Walter Cannon, the distinguished professor of physiology at Harvard, whilst still a medical student in 1897, conceived the idea of watching cats with the recently discovered X rays after they had been fed on a mixture of food and opaque bismuth salts. He found that when the small intestines were thus visualised, two types of motor activity could be recognised. The first is peristalsis, by means of which the contents are propelled onwards. The second is segmentation, by means of which the bowel is divided into short segments by localised contractions of the circular muscle-fibres; relaxation quickly follows and is accompanied by contraction in the centre of the original segments, with the result that the food is thoroughly mixed with the digestive juices and the chyme is brought into intimate contact with the mucous membrane, which can then absorb the soluble products of digestion.

Under normal conditions the ileo-cæcal sphincter is closed, so that the chyme which travels rapidly down the small intestines remains for a considerable period in the last few inches of the ileum, which constitute a kind of "intestinal stomach," in which pancreatic and intestinal digestion is completed and the greater part of the products of digestion are absorbed. When the next meal is taken a gastro-ileo-cæcal reflex occurs, which results in the segmentation in the terminal ileum being replaced by peristalsis. The ileo-cæcal sphincter relaxes as each wave of peristalsis reaches it, so that the cæcum and ascending colon become filled, whilst the "ileal stomach" is emptied in preparation for the arrival of more chyme derived from the meal which has just been consumed.

When the colon is watched with the X rays no movements can be recognised under ordinary conditions, and for a long time it remained a mystery how its contents ever reached the rectum. In 1907[1] we made hourly tracings of the colon in normal individuals who had taken an opaque meal the previous day. We found that no change occurred except during the hours in which a meal had been consumed (Fig. 1). This led us to watch the colon during and immediately after meals.[2] We then discovered that a gastro-colic reflex occurs when food entered the stomach, which results in "mass peristalsis" of the colon (Fig. 2), a movement which had been independently observed by Holzknecht and by Barclay. The contents of the colon are conveyed by one or two powerful waves of contraction from the ascending colon to the pelvic colon. The ascending colon is thus emptied in order to allow the entry of the contents of the ileal stomach, whilst the fæces are stored in the pelvic colon. The fæces do not pass beyond the pelvi-rectal flexure, the acute angle at the junction of the freely movable pelvic colon with the fixed rectum, owing to the presence of an obstacle in the form of a prominent fold of mucous membrane, the uppermost valve of Houston. The pelvic colon gradually fills from below upwards, whilst the rectum remains completely empty.

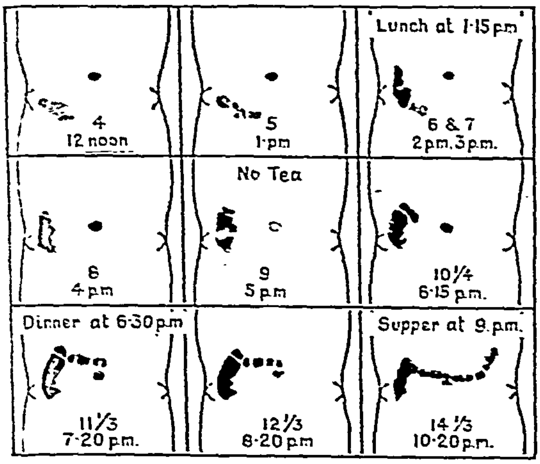


FIG. 1.—Hourly tracings to show effect of meals on the movements of the colon. The opaque meal was taken at 8 A.M.

By taking radiograms at intervals of a minute or of three minutes, Dr. P. J. Briggs and I have found that the familiar haustrated appearance of the colon seen with the X rays is continually changing (Fig. 3); the "haustrations" do not correspond, as was formerly believed, with the antomical haustrations seen in the colon after death, which depend upon the tonic contraction of the muscular coats, but represent phases in the constant movements of the mucous membrane which are produced by the muscularis mucosæ, as first suggested by Forssel of Stockholm. These movements have the same effect as the segmentation of the small intestines, and by constantly bringing successive portions of the soft fæces into contact with the mucous membrane they promote absorption of water and the gradual conversion of the fæces into the form in which they are eventually passed.

An infant is trained to open his bowels when he is put on a chamber, no mental process being concerned in the act. In the course of time an elaborate conditioned reflex develops, in which getting up, a bath, dressing, breakfast, and finally sitting down with a newspaper and a pipe in the familiar w.c. take part, as a result of which the biggest wave of mass peristalsis of the day occurs, the whole of the colon

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* An address given at the Massachusetts General Hospital, Harvard University.

taking part (Fig. 4, *a*, *b*, and *c*). By introducing a balloon through a sigmoidoscope we found that distension of the pelvic colon produced discomfort in the lower part of the abdomen, but distension of the rectum produced a perineal sensation, which is indistinguishable from the normal "call to defæcate."[3] When the fæces which have collected in the pelvic colon during the previous 24 hours enter the rectum as a result of the conditioned reflex I have just described, they give rise to the call to defæcation. The diaphragm and abdominal wall are then voluntarily contracted; the rise in pressure within the rectum calls forth the final reflex, which results in the contraction of the rectum as a whole with relaxation of the anal sphincter through which the fæces are evacuated.

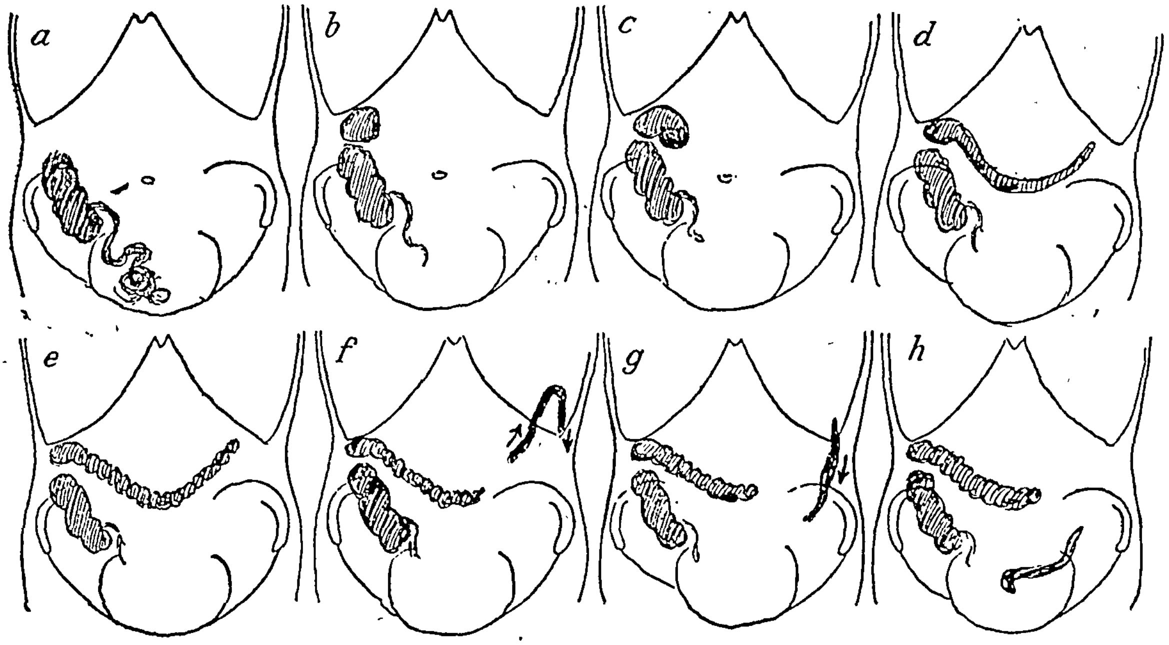


FIG. 2.—Tracings showing mass peristalsis occurring immediately after luncheon at 12 noon, an opaque meal having been taken at 7 A.M. An interval of five minutes occurred between the series (*a*) to (*c*) and the series (*c*) to (*h*).

Constipation

Many years ago I suggested that all cases of constipation could be divided into two groups, those in which the passage along the colon is abnormally slow—colonic constipation—and those in which the rectum is reached without delay but defæcation is inefficient—a group to which I gave the name of dyschezia. I am now inclined to believe that all cases of constipation are due to dyschezia, the delay in the colon in the first group being a result of inefficiency of the conditioned reflex, which should result every morning in the partial evacuation of the proximal part of the colon into the pelvic colon and of the pelvic colon into the rectum, though doubtless in some cases the gastro-colic reflex which should help to empty the proximal colon after each meal is also deficient. In the more obvious cases of dyschezia the first part of the reflex is unimpaired, but owing to slackness and other causes it is *not followed* by the second part, in which the rectum contracts and the anal sphincter relaxes, so that the rectum is found to be packed with fæces at whatever hour it is examined.

The majority of cases of constipation can be cured by re-establishing the conditioned reflex upon which successful defæcation depends. Simple explanation of the physiology of defæcation and encouragement are often all that is required, but it may be necessary to reduce the work the muscles of defæcation have to perform by giving paraffin or some unirritating vegetable mucilage, such as agar agar, isogel, or coreine, which increase the bulk and soften the fæces, together with a diet containing plenty of fruit and green vegetables.

The vast army of hypochondriacs, who are never happy unless their stools conform to an ideal which they have invented for themselves, can only be cured by making them realise that fæces have no standard size, shape, consistence, or colour; they are then ready to follow the example of the dog rather than that of the cat—and never look behind them.

Purgatives

It is sad that the description given by Gulliver to the Houyhnhnms of the habits of his fellow countrymen is as true to-day as it was in 1727: "they take in at the orifice above a medicine, equally annoying and disgustful to the bowels, which relaxing the belly drives down all before it; and this they call a purge." Over £10,000,000 are spent annually in Great Britain on patent medicines, the majority of which are purgatives. When a habitual pill-taker is cross-examined and his intestinal functions are investigated, it is found in the majority of cases that he is not constipated at all. He takes purgatives for symptoms which newspaper advertisements tell him are caused by "auto-intoxication," the result of sluggishness of the bowels. But when he is persuaded to leave his bowels alone, his symptoms generally disappear at once, as they are a sequel of the toxæmia caused by the artificial diarrhœa produced by purgatives and not of constipation, which may cause local discomfort and is often a source of much anxiety to the patient, but very rarely gives rise to toxæmia, as hard dry fæces do not undergo bacterial decomposition, and, even if they did, it would be impossible for the mucous membrane to absorb anything from them. An aperient upsets the delicate mechanism of the ileo-cæcal sphincter, which normally allows for the complete digestion of food in the almost sterile small intestine, in which the products are absorbed without undergoing bacterial decomposition. When an aperient is taken a good deal of semi-digested food reaches the colon, which is swarming with bacteria, which flourish when the contents of the colon are fluid instead of semi-solid or solid as they are under natural conditions. Putrefaction of proteins, fermentation of carbohydrates and bacterial decomposition of fats occur, and the toxic products are absorbed. The liver is often able to render them inert and the kidneys to excrete what has escaped from the liver, but if either of these organs is inefficient or if the drugging continues over long periods, toxic symptoms occur.

Enemas

According to Pliny the ancient Egyptians learnt how to wash out their bowels by observing the habits of the ibis: "he washes the inside of his body by introducing water with his beak into the channel by which our health demands that the residue of our food should leave." It is a pity to deprive the ibis of his claim to this epoch-making discovery, but when he appears to be giving himself a Plombières douche, what he really does is to wash his beak in water and then oil it on his preen-gland, which is situated near the anus, in preparation for preening his feathers.

In the seventeenth century enemas became extremely popular in France. Molière in the "Malade imaginaire," speaks of "un petit clystère insinuatif, préparatif et rémollient pour amollir, humecter, et refraîcher les entrailles de Monsieur," and Voltaire, writing to a young friend in 1754, says that one of the essential gifts he should look for in a wife is the ability to administer an enema rapidly and pleasantly. Louis XI. believed so much in the efficacy of the treatment that he had a daily enema administered to his dogs with a syringe of copper, and the pious Duchess of Alba tried as a last resort the effect of enemas containing a suspension of powdered religious relics for her dying son, but unfortunately without effect.

Enemas were introduced into England early in the nineteenth century, but the literal translation of "lavement" led to the addition of soap, which is still used extensively here though nowhere else—an unfortunate mistake, as soap solution is extremely irritating.

About 25 years ago it gradually became realised that intestinal lavage as practised in Plombières and other spas in France and England caused more colitis than it ever cured, but the last five years have seen a revival of the treatment in England in a more pernicious form than ever, in which the patient has his colon washed out continuously for a couple of hours with as much as 30 pints of fluid. There are now in London several "colon laundries," as they are called in America, in which this unpleasant and unscientific treatment is practised, and when the course is completed the patient is often persuaded to buy an apparatus in order to continue the good work at home.

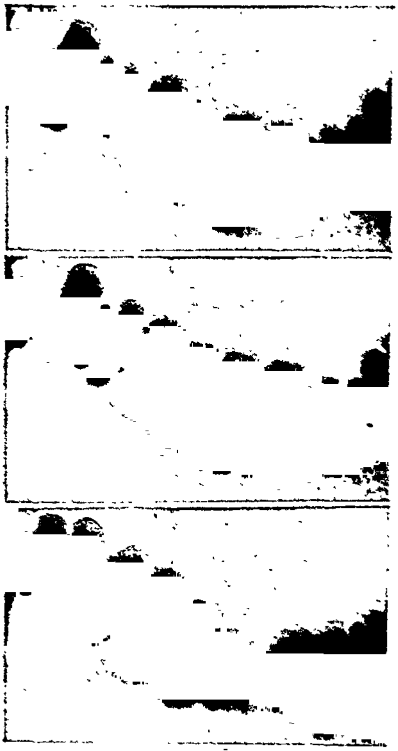
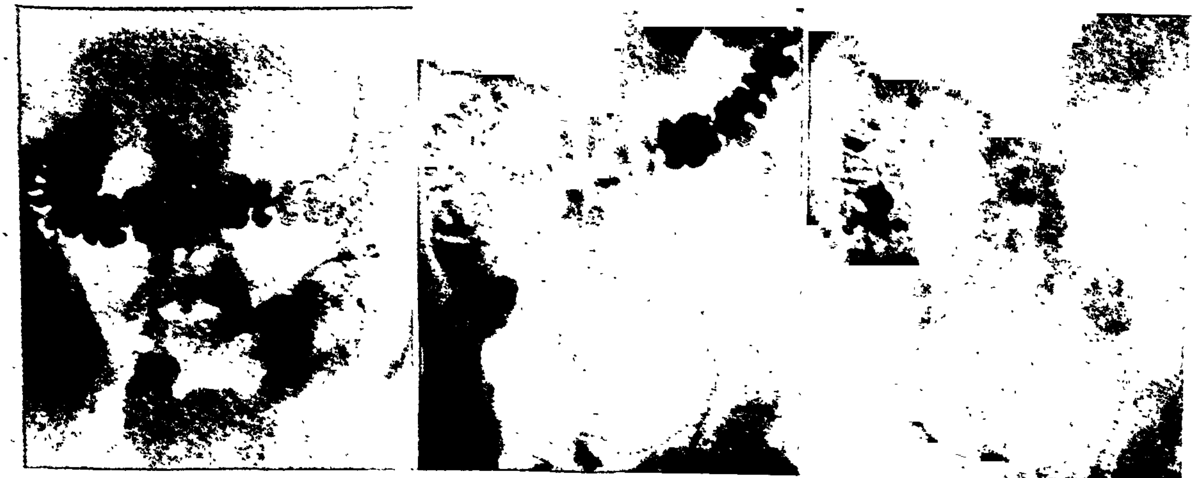


FIG. 3.—Three radiograms taken at intervals of one minute showing changes in outline of colon resulting from segmentation. (Dr. P. J. Briggs.)

A man of 50 had acquired the habit of washing himself out for two hours every morning and again every evening on his return from business. It was difficult to remove his obsession that a "clean" colon was essential for health, but a week's experience with no lavage and no



(a) (b) (c)

FIG. 4.—Radiograms showing results of defæcation in a normal man: (a) 9.15 A.M., before defæcation—barium was taken previous evening; (b) 9.25 A.M., after first defæcation; (c) 11.20 A.M., after second defæcation. (Dr. P. J. Briggs.)

medicine led to such an improvement in his health that he has continued ever since to let his bowels work naturally.

Intestinal lavage is required as an exceptional measure in exceptional cases, but nothing but harm can result from its present indiscriminate use. Plain water or normal saline solution should be employed, and no irritants such as soap, turpentine, and antiseptics should be added.

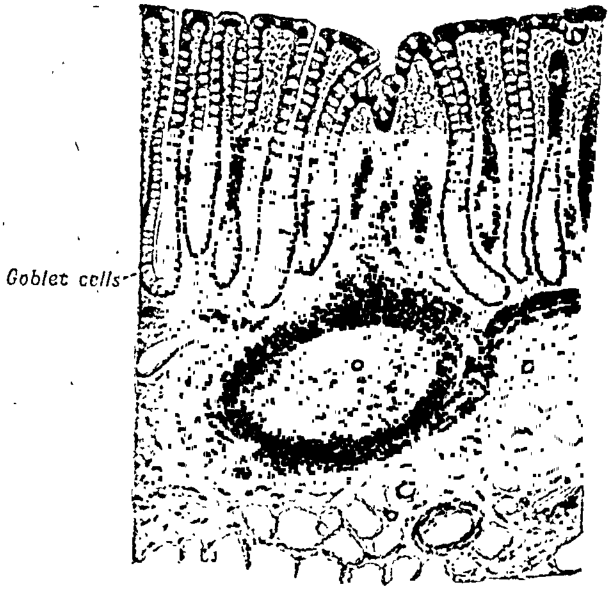


FIG. 5.—Mucous membrane of the human colon showing numerous goblet cells in the crypts of Lieberkühn. × 70: (after Braus). (Reproduced from the *Proceedings* of the Royal Society of Medicine, 1934, xxvii., 678.)

Size, Position, and Mobility of the Colon

Many years ago Barclay showed that the tone of the stomach varied with the volume of its contents, and the same is true for the colon. If it were not for this the internal pressure would rise with each increase in the bulk of the contents, and as the sole adequate stimulus of visceral discomfort and pain in a hollow organ is increased tension in its muscular coat, discomfort and pain would frequently occur, whereas the normal process of digestion takes place without giving rise to any sensation. Both the transverse and longitudinal muscle coats are involved in this adaptation. Consequently, the transverse diameter and the length of the cæcum and ascending colon are less during the few hours after complete defæcation following breakfast than during the rest of the 24 hours (cf. Fig. 4, *a*, *b*, and *c*). The transverse colon may vary in length by as much as 2 in. according to whether it is full or empty, and the iliac colon, which is generally empty, can often be felt as a contracted and almost solid cord. A knowledge of these variations would prevent the possibility of such erroneous diagnoses as dilated atonic cæcum and spasm of the iliac colon being made as a result of palpation and X ray examination, and constipation would not be regarded as a result of an atonic large intestine.

The position of the colon varies greatly in different individuals. It also varies greatly in the same individual with changes of posture, as Barclay has so well demonstrated, and according to whether the stomach and bladder are full or empty. Radiologists still diagnose a pelvic cæcum and ptosis of the colon far too frequently, and surgeons have not yet discarded operations for fixing the colon in the position it occupies in the illustrations of text-books of anatomy but nowhere else, not having realised that the healthy bowel requires "absolute freedom of movement and an entire absence of fixed points" (Barclay). In the erect position the cæcum of healthy persons is as often in the pelvis as in the right iliac fossa, and even when it makes a permanent home of the pelvis it can be very warm and comfortable there. In many instances it is far better there than higher up, because it is associated with an ascending colon which is longer than the average, so that it would be cramped and kinked if it were in the right iliac fossa. Some surgeons are difficult to please. If the colon is fixed by adhesions they mobilise it, if it is unduly movable they fix it.

A woman of 26 had her appendix removed for abdominal pain when she was 17. As the symptoms persisted she was operated upon again two years later and adhesions were divided. When she was 23 another surgeon operated because, as he wrote to me, "I thought there were adhesions pressing over the colon." He found, however, that there were no adhesions, the bowel being "abnormally movable," so he fixed it—thus doing exactly what he intended to undo when he advised operation. After this the symptoms were worse than ever, but they disappeared when the patient was persuaded to give up aperients, which she had throughout been taking in excess.

Secretion of Mucus

The mucous membrane of the colon, like every other mucous membrane, secretes mucus in response to irritation. The majority of the cells lining the crypts of Lieberkühn are goblet cells (Fig. 5), and their ability to secrete mucus in response to mechanical and chemical irritation is a sign of their healthy activity. The fæces which collect in the pelvic colon are often dry and hard. Mucus is secreted, so that the scybala are covered with a thin layer of mucus, which facilitates their smooth passage through the rectum and the narrow anal canal. When a purgative is taken the mucous membrane secretes mucus in order to protect itself from damage, as the drug acts by irritating the mucous membrane and so initiating a local reflex leading to increased motor activity. Consequently the loose stool which is passed often contains excess of mucus. Enemas of all kinds, but especially those containing irritants such as soap, turpentine, potassium permanganate, and silver preparations, also act as irritants and cause increased secretion of mucus.

Patients frequently bring illuminating reports from the attendants at colon laundries. The following is typical.

A boy of 18 had always had a tendency to constipation and had been continually dosed by his mother with aperients. His report stated that he had been given an irrigation of 30 pints, the treatment lasting one hour and ten minutes. "The first 12 pints brought away loose fæces but no mucus, but after that a large quantity of jelly mucus was passed continuously until the end of the treatment." That is to say, 12 pints of fluid were required to irritate the healthy mucous membrane of this boy sufficiently to produce excess of mucus, but when once it began to be secreted it naturally continued, and there would still have been mucus present if he had received 100 instead of 30 pints.

The patient is often told that the mucus has been accumulating in his colon for weeks or months and that is why he has never seen it in his stools, whereas the truth is that his mucous membrane is none the worse for a few pints of water, but after the first few pints it has to protect itself by secreting mucus. It is sometimes reported that by the end of the patient's "cure" little or no mucus is present, the explanation being that the patient's mucous membrane responds at first by the secretion of mucus to the unaccustomed irritation, but after some weeks the mucus-secreting cells become exhausted and go on strike.

The mucus present under these circumstances contains epithelial debris and bacteria, but no leucocytes or red corpuscles. Florey has shown that the sticky mucus secreted by the goblet cells picks up minute particles from the surface of the mucous membrane. It is then rolled into small masses by the activity of the muscularis mucosæ and expelled with the fæces. Consequently the mucus contains the epithelial debris, which is constantly being shed by the mucous membrane, and the bacteria which normally inhabit the colon, but their presence, unlike that of leucocytes, red corpuscles, or pathogenic organisms, is not an indication of inflammation or infection. The sigmoidoscope also shows that the mucous membrane is perfectly healthy. Yet the discovery of mucus in the stool is widely regarded as evidence that "mucous colitis" is present, and mucous colitis is consequently believed to be a very common disease, whereas the presence of mucus with a formed stool, with an unformed stool when a aperient has been taken, or in the result of a colon "wash-out," is really evidence that the mucous membrane is healthy and capable of protecting itself from damage by mechanical and chemical irritants.

When excess of undigested food reaches the colon, as in achlorhydric gastritis and in enteritis, the colonic mucous membrane may respond to the irritation by secreting excess of mucus, although no colitis is present. Achlorhydric gastritis and enteritis are indeed the most common of all causes of chronic diarrhœa, the loose stools often containing excess of mucus.

It is clear, therefore, that mucous colitis can only be justifiably diagnosed in the very exceptional cases in which mucus is passed with soft or liquid stools by a patient who is not taking aperients and who has not achlorhydria or enteritis. We must further exclude cases in which blood or pus is passed as well as mucus, as, unless carcinoma of the pelvic colon or rectum is present, ulcerative colitis or hæmorrhagic colitis will be found on sigmoidoscopic examination.

There is one condition which I have not yet mentioned—so-called muco-membranous colitis, in which the patient passes thin shreds or membranes, which sometimes form complete casts of a segment of colon several inches long. It occurs mainly in neurotic and constipated women, but it is a remarkable fact that whereas up to 1914 it was quite common among private patients, it has become exceedingly rare since the war not only in England, but also on the Continent (Boas). This is in spite of the fact that colon spasm, with which it is always associated, is as common as ever. The disappearance of the condition is as mysterious as that of chlorosis. Many years ago Dr. Gordon Goodhart examined several such membranes for me; they were formed of coagulated mucus and contained no inflammatory material, and the sigmoidoscope showed a perfectly healthy mucous membrane. The condition, which is most appropriately known as muco-membranous colic (not colitis), has many features in common with asthma. It depends upon abnormal irritability of the parasympathetic nerve-supply of the colon, and it is occasionally allergic in origin, the mucous casts representing the Curschmann's spirals expectorated by asthmatics, cases of pure colon spasm corresponding with the not uncommon cases of asthma, in which the secretion of mucus is very scanty.

I have seen only one case of muco-membranous colic associated with diarrhœa. This was a true allergic condition, the membranes being blood-stained and containing enormous numbers of eosinophil cells. The sigmoidoscope showed innumerable minute submucous hæmorrhages but no ulceration, and the mucous membrane was not swollen, red, and vulnerable as in ulcerative colitis. Complete relief followed the administration of a drachm of castor oil every evening and a drachm of Epsom salts every morning after numerous forms of specific and non-specific desensitisation and local treatment of the bowel had completely failed.

I hope I have succeeded in giving a clear picture of the normal human colon, as a thorough knowledge of its anatomy and physiology is the only sound basis for an understanding of its disorders and how to treat them.

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BONE CHANGES SIMULATING TUBERCULOSIS OR TUMOUR

WITH SPECIAL REFERENCE TO OSTEOCHONDRITIS

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THOUGH the clinical signs and symptoms of bone disease are sometimes sufficiently characteristic to make a diagnosis possible there are few clinicians to-day who would venture to omit a radiographic examination. No one realises more fully than the radiologist that this is only part of the investigation, a part which must be a supplement to a thorough clinical study, and he is opposed to the current tendency to rely solely upon the radiographic findings. This tendency is carried so far in some cases that the clinician may be said to sacrifice his clinical observations for what he thinks he sees on the radiogram, or see in the radiogram shadows which appear to agree with what he found clinically. He will get the full benefits from radiology when he entrusts the interpretation to an experienced observer only, and discusses the radiologist's report in the light of the clinical findings which he supplies at a subsequent consultation.

Where such aids to diagnosis as the ophthalmoscope, cystoscope, or bronchoscope are in question every wise clinician relies upon the interpretation of men of experience; and with X rays too he will not substitute his own interpretation for theirs, even though his clinical findings are not in agreement.

Experienced radiologists are faced each week with problems which are difficult or insoluble, even with the aid of long experience and all the available clinical data; yet there are men without hospital experience who tackle such problems without hesitation though the radiograms before them are often of poor quality, and they may be ignorant even of the artefacts produced by faulty dark-room technique. And as poor radiology is usually associated with inferior clinical work it is not surprising that such an attitude leads to many unjustifiable errors, particularly those relative to tumour or tuberculosis. Thus cases have been published of ossifying periosteal hæmatomata which have been mistaken radiographically for periosteal sarcomata, with subsequent amputation of healthy limbs,[1] and I am acquainted with a number in which further X ray examination has saved the patient a long period of fixation for bone tuberculosis.

Common Sources of Error

Hæmatoma associated with the shaft of a metatarsal bone, most commonly the second, is produced probably by trauma so trifling that the patient does not suspect any bone damage. In the course of a few weeks the dorsum of the foot becomes swollen and he seeks medical advice. At this time a definite and relatively hard tumour may be detected, over which the skin is stretched and reddened. The degree of tenderness is not such as would lead to the suspicion of acute sepsis. A radiogram at this stage may show a flocculent deposit of calcium irregularly disposed around the affected metatarsal bone, which also shows a relative osteoporosis. No definite fracture line may be detected. These are the radiographic and clinical appearances which have led to amputation of healthy limbs. But if the affected foot is put at rest for a few weeks the swelling of the soft tissues will subside, the hardness of the tumour will diminish, and a further radiogram will show that the flocculent deposit of calcium in the hæmatoma has been moulded, and the typical "plumber's wiped joint" appearance of callus which is being trimmed down around the weakened metatarsal will be recognised as a healing process. I have recorded similar appearances in the long bones of the limbs which had been misinterpreted as evidence of malignant bone disease.

Healed localised foci due to *sepsis, tuberculosis* or *syphilis* present an irregularity in the ossification of the cancellous tissue sometimes associated with ill-defined deposits of calcium. The most frequent site to see these changes is in the lower third of the femur shaft. They, too, have been attributed to malignant bone disease.

Arthritis, especially of the spinal articulations or hip-joints, and even congenital deformities, are sometimes mistaken for tuberculous arthritis on insufficient grounds. In the early stages of tuberculous arthritis the bones may, it is true, show little or no radiographic change, but after a few weeks further radiograms will show definite signs of bone disease, and once destructive changes have been caused by this infection the bone never again appears normal, even when the lesion has healed. The diagnosis of bone tuberculosis should not be considered established until X ray evidence is obtained, and if radiography is used in this manner, the period of rest of non-tuberculous lesions can be determined by the clinical signs and symptoms, thus obviating a very long period of invalidism and the stigma of tuberculosis. This stigma may not only influence the patient's life—affecting such matters as occupation, life assurance, and marriage—but may also prejudice the diagnosis of other illnesses in the patient and members of his family, as in a case I have recorded. In actual cases of bone tuberculosis serial radiography is invaluable for watching the progress of the lesion and in this way assisting in the control of treatment.

Legg-Perthes Disease

There is a group of conditions collectively known as various forms of *osteochondritis* which have radiographic appearances especially liable to be wrongly regarded as evidence of bone tuberculosis. Lesions of this kind have been described in most of the *primary* and secondary centres of ossification before or after fusion of the epiphyses—that is to say, at all age-periods, though more frequently in childhood and adolescence—but the commonest site for them is the epiphysis for the head of the femur, where they give rise to Legg-Perthes disease. (Osteochondritis was distinguished as an entity in 1910 by several workers, including Legg, Perthes, Calvé, Waldenström, and Köhler.)

The signs and symptoms of this condition vary in severity, and frequently the early signs are transient. A history of trauma and an account of bouts of pain associated with a limp may be given, but often medical advice is not sought for many months after the onset of the symptoms. If, as occasionally happens, a radiographic examination is made in the early stage, the bone changes may escape detection and a negative report be given. With a few days' rest the signs and symptoms may disappear and the case be regarded as one of traumatic arthritis. But within a few months the patient is brought back again because the bouts of pain have become worse and more persistent. If radiographic examination is now made the doctor, unless he is familiar with the condition, will be shocked at the extent of the destructive changes depicted in the epiphysis, the adjacent extremity of the diaphysis, and sometimes in the roof of the acetabulum. In the light of these changes it is no wonder that the diagnosis of tuberculosis is seriously considered, especially as the general condition of the patient is usually below normal. Here, as in bone tuberculosis, serial radiography is essential, not only for the diagnosis but also for the control of treatment.

THE CHANGES SEEN

From an examination of the serial radiograms of over 70 cases I have drawn up the following record of the changes seen throughout their course.

The earliest radiographic evidence of Legg-Perthes disease I have been able to obtain is :—

(1) An *increase in the density of the femoral capital epiphysis*, usually associated with

(2) A *relative increase in the joint space*, the comparison being made with that of the opposite hip-joint which should always be included in the radiogram. This appearance is soon followed by :

(3) *Osteoporosis of the adjacent extremity of the diaphysis.* This may appear as : (*a*) linear zones of radiotranslucency following the lines of the principal bone trabeculæ, which appear to run obliquely downward and outward from the epiphyseal line ; (*b*) a zone of radiotranslucency of almost uniform depth across the proximal extremity of the diaphysis ; or (*c*) one or more circumscribed areas of radiotranslucency in the diaphysis near to, or abutting on, the epiphyseal growth cartilage or more distally situated in the neck away from the immediate proximity of the epiphyseal line.

The above three signs are usually to be found towards the end of the second month of the onset of symptoms. The prominence of Signs 1 and 2 gradually increases ; the joint space remaining about the same.

In my series there have been several cases in which radiography showed these signs and the patient gave a history of injury to the hip-joint area two or three months previously. A number of cases have also come to me several months after a radiographic examination at which these early signs had escaped detection, which is another strong argument for the inclusion of both hip-joints on the radiogram.

(4) *The dense epiphysis then begins to show signs of compression and impression fractures*, and this is followed during the next three months by

(5) *The appearance of fragmentation.* In this condition the epiphysis appears to be broken up into a number of dense fragments, and as the epiphysis has lost its homogeneity and capacity for withstanding the stresses and strains,

(6) *It is compressed and flattened still more.* Some of the lateral fragments may at this stage be squeezed over the end of the diaphysis and beyond the lateral margin of the roof of the acetabulum.

(7) *Gradual absorption of the dense islands* of bone occurs and

(8) *Compression and expansion of the proximal end of the diaphysis*, which is now beginning to fix more calcium, and consequently becoming denser; the osteoporotic zones are being obliterated or surrounded with dense margins.

Signs 4, 5, 6, 7, and 8 are to be found during the eighteen months of the disease. After that the radiograms will show—

(9) *A faint outline of a regenerated epiphysis* in which the dense fragments appear to be undergoing absorption for their outline cannot now be distinguished.

(10) Eventually *the last dense nucleus is absorbed* and in its place will be seen an area of relative osteoporosis.

(11) The extremity of the diaphysis shows increased deposition of calcium and obliteration of the osteoporotic zone.

Signs 9 and 11 are shown on radiograms taken during the 1½–4 years after the onset of symptoms, and while they are present, the epiphysis remains in a plastic state; consequently it may be deformed by pressure. Owing to the deformity of the femoral head the joint space is now irregular but not diminished. Usually during this period the patient has few or no symptoms of hip-joint disease and is allowed to run about without any support, or at most with the support of a calliper only. Hence it is not surprising that many of these affected femora become permanently deformed, for the plastic epiphysis is incapable of bearing the weight without giving way to some extent and becoming moulded over the expanded and compressed extremity of the diaphysis.

After the lapse of four years

(12) The cancellous structure of the epiphysis assumes the radiographic appearance of normal bone. Though the epiphysis and the adjacent diaphyseal extremity are compressed and deformed the epiphyseal growth cartilage does not disappear, as in those cases in which the epiphysis and diaphysis are involved in an inflammatory process, or in which a separation of the epiphysis has occurred. This is an argument against the suggestions that the process is due to sepsis or displacement of the epiphysis.

The study of a large series of these cases shows that the characteristic changes take place in bone which is within the capsule of the joint—i.e., the epiphysis, the roof of the acetabulum, and the proximal end of the neck of the femur. This suggests that the initial lesion leads to an alteration of the constituents of the synovial fluid within the joint which, as we have seen, is apparently increased in the early stages. The radiographic appearances suggest that the condition of osteochondritis results in a redistribution of calcium in those bones only which are associated with the fluid contents of the capsule. Thus we see that the epiphysis takes up calcium while the end of the diaphysis loses it, and later, when healing takes place, the flow of calcium is in the opposite direction. The bones outside the capsule show little or no change unless the picture is complicated by disuse atrophy. The nutrient foramen of the femoral shaft does, however, appear to be more prominent and perhaps rather larger than normal. A similar series of changes is seen in osteochondritis of the head of the second metatarsal. In contradistinction to tuberculous arthritis the healed articular surfaces are smooth though deformed, and bony ankylosis does not occur because the articular cartilage is not destroyed.

VARIATIONS ENCOUNTERED

Certain variations occur during the progress of the disease.

(1) The acetabulum may develop similar changes, either during or after the healing of those seen in the epiphysis. Following such changes the acetabulum is also compressed, a feature most clearly indicated at the upper lateral border where the bone projects beyond the normal boundary. In one case in the series these changes were not recognised until three years after the onset of the first signs. If the pelvic wall of the acetabulum is affected this may yield, and the condition of protrusio acetabuli develop. This is, however, more frequently associated with chronic arthritic changes of the rheumatoid type.

(2) Following the absorption of the epiphyseal fragments regeneration of the epiphysis may occur. The final appearances of the healed hip-joint depend on the stage at which the disease was recognised and the duration of rest of the affected bone from stress and strain during the plastic stage of the disease. In those cases in which the pressure has been evenly distributed over the plastic femoral head and acetabulum, the former is uniformly expanded, and the latter is flattened out and enlarged to accommodate the large femoral head. When the lateral fragments of the epiphysis are squeezed beyond the lateral border of the roof of the acetabulum, during the regeneration of the epiphysis, a displaced fragment also develops and eventually comes to lie with its medial border against the lateral border of the roof of the acetabulum. In this position it limits abduction. If the limb remains adducted during the plastic phase, the lateral aspect of the epiphysis may undergo more severe changes than the medial aspect. Any joint in which the disease has resulted in deformity of the articular surfaces works at a disadvantage and is not capable of bearing the stresses and strains of a normal hip-joint. Consequently such a joint develops the signs of traumatic arthritis at an earlier age than the opposite hip-joint.

DIAGNOSIS AND TREATMENT

Of the 71 patients with Legg-Perthes disease whom I have examined, 53 were boys and 18 were girls. In the boys the right hip-joint was affected in 23, the left in 26, and both in 4. In the girls, the right hip was affected in 11, and the left in 7. This distribution indicates that the disease is three times commoner in boys than in girls, but that the incidence on the two sides is about the same. The ages of the patients showing active stages of the disease ranged from three to fifteen years. One child, aged 2½, showed typical changes in the femoral epiphysis on the radiogram, but a year afterwards a definite septic arthritis of the hip-joint developed. Most of the patients showed the first signs of the disease between the ages of four and eight. In the first instance they all attended the out-patient departments of hospitals, and for the most part they were living in poor circumstances.

The most constant sign of this affection of the hip-joint is a *limp* which may be slight for weeks, and then assume such an importance that the parents seek medical advice. Though a limp could be detected in all the patients, pain in the region of the hip-joint was recorded in only 25 of the 71, and showed a wide range of severity. In some it was noticed for a short time on rising in the morning; in others it was present when the patient was standing or walking; in others, again, only after fatigue. In 4 cases the pain was so severe during the night that the patient was awakened and cried out. In 11 cases the patient also complained of pain in the region of the knee-joint.

These signs and symptoms were so intermittent and variable that a number of the patients had been put to bed for 1–4 weeks with the diagnosis of rheumatism. Then, because all movements of the limb were full and painless, they had been allowed their usual freedom, and this was always followed by a return of the disability. In 26 of the patients there was a definite history of a fall preceding the onset of the symptoms.

On examination it is found that the affected limb shows adduction and a somewhat prominent great trochanter. A flexion deformity of 10°–15° may be present, and if there is a long history of a limp or pain, the muscles of the limb will be under-developed compared with the sound side, giving a suggestion of wasting, though not to the extent seen in tuberculous arthritis. In some cases as much as ½ in. of shortening of the affected limb is detected, but in most of those in this series no such deformity could be found. As a rule the movements of the limb are free and painless even though there may be some spasm of the adductor group of muscles. Except in abduction and rotation, which are restricted, the movements are full, and as a rule no tender spot can be discovered.

In no condition is radiography more helpful than in these cases of localised rarefaction of the bones. A striking feature is that in the early stages the clinical signs and symptoms are usually, for a short time, so prominent that the negative radiographic appearance comes as a surprise; if changes are present they may be so slight as not to be recognised. Several weeks or months may elapse during which the child is allowed to play about before he is brought for further surgical inspection. The signs and symptoms may now be so much improved that the doctor is convinced the lesion, whatever it was, is healing. But when the radiogram is seen the appearances cause alarm.

The early clearance of signs and symptoms means that many of these patients are not brought for surgical advice until a definite and constant limp has developed; indeed, in my series the history and radiographic findings suggested that in the majority the hip-joint had been affected for several years. It is rare, therefore, to obtain a series of radiograms in which the commencement of the disease is shown. Periodic radiographic examinations will reveal the stage of the lesion and give an indication when the bone can safely be subjected to the normal stresses and strains. Radiographic histories of my patients, re-examined for the purpose of this paper, show that on an average the bone remains in a plastic state for over 3 years; the shortest time observed being about 2½ years and the longest 10 years. In the latter case the disease ran its course in one hip for 4 years and then began in the opposite hip, which has not yet completely consolidated. Another series of radiograms revealed that after nearly 4 years similar changes began to develop in the roof of the acetabulum of the affected hip-joint.

The accompanying Table summarises the results of my observations. The stages referred to under "appearances" are those already described.

Serial Radiographic Findings

Appearances.	Age of lesion judged from onset of first symptoms.	Condition of bone.
Signs 1–3	2–3 months.	Becoming plastic.
„ 4–8	3–18 „	Plastic.
„ 9–11	1½–4 years.	„
Sign 12	During or after 4th year.	Consolidated.

My reason for using the term "plastic" in these stages is that I have followed up the radiographic history of such hip-joints and found that the affected bone has shown the pressure deformities of weight-bearing as long as these changes persist. This would account for the statements previously referred to—namely, that even after immobilisation for two years the final result differed little from the limb allowed freedom from weight-bearing. I suggest therefore that the best results will be obtained in those cases which are recognised early and kept immobilised as long as the radiographic appearance suggests plasticity of the bone—even to the length of four years; I believe there is little justification for immobilisation during only a part of the time that the bone shows plasticity. In support of this contention I would point out that I have seen cases (exhibited by Mr. McCrae Aitken [2]) showing all the stages in the radiographic appearances here described. The patients were immobilised as long as the radiograms suggested plasticity and the final appearances of these hip-joints have been indistinguishable from normal. This immobilisation does not check the disease. The sequence of changes described takes place however the joint is fixed.

In view of the poor condition of many of the children, open-air treatment supplemented by light baths and good food is beneficial.

The operative measures devised and suggested by R. Whitman have not been generally adopted.

Bone changes similar to those seen in the capital femoral epiphysis in osteochondritis juvenilis occur in other bones, more particularly in the head of the second or third metatarsal bones, the tarsal scaphoid, and the semilunar. They all present typical radiographic appearances which have been described in another paper.[4]

DIFFERENTIAL DIAGNOSIS

In *tuberculosis of the hip-joint* the clinical features are usually prominent, including pain, marked limitation of movement, pain on manipulation, and wasting of the muscles of the affected limb. The radiographic appearances are distinctive. The most striking feature is the general osteoporosis of the bone in the neighbourhood of the joint, diminution of the joint space, erosion of the bone at the focus of infection, and later the separation of an amorphous sequestrum. Perhaps even more distinctive are the radiographic differences between healed bone tuberculosis and osteochondritis. Whereas the regenerated bone in osteochondritis takes on the internal structural appearances of normal bone, the bone which has been involved in a tuberculous process never again appears normal. The bone "scar" can be detected and the cancellous trabeculation of the neighbouring bone has a coarseness of texture which can readily be distinguished from the normal. If the articular surface of the joint has been attacked this will always be apparent from the radiogram. Bony ankylosis may result, whereas in osteochondritis the articular cartilage is not destroyed and fusion of the articular surfaces does not occur.

In *septic arthritis* there is high temperature, pain, swelling, local heat, and redness. On radiography at this acute stage the bones are apparently normal, but later general osteoporosis with separation of the head of the femur as a sequestrum or erosion and absorption of bone are usually seen. Finally, when the inflammatory stage has passed, bony ankylosis will become established.

Endocrine disorders.—In my book[3] I have illustrated that hypothyroidism is associated with delay in ossification and the appearance of multiple irregular osseous nuclei in the growing epiphyses. The appearance of these nuclei on radiograms of the epiphyses of such patients has been misinterpreted as the fragmentation stage of Legg-Perthes disease. Owing to their irregular ossification, these epiphyses may also undergo a very severe degree of moulding, even more severe than is seen in the worst cases of osteochondritis, a feature well shown in a paper on deformity in cretins by Berard and Novel.[5] The shafts of the bones in these patients are usually characteristic and a thorough clinical examination should make the diagnosis clear, for the changes are symmetrical and of an equal age-period.

Chondrodystrophies.—The defective ossification of the long bones in the condition which I described as chondro-osteo-dystrophy leads to some degree of dwarfism which is relatively symmetrical. In those cases in which the dystrophy is of a mild degree the dwarfing will not be so obvious. A certain amount of swelling may be apparent over the superficial joints and radiography will show, at certain ages, multiple osseous nuclei in the epiphyses with expansion and irregularity of ossification of the diaphyseal extremities. In this condition also the defectively ossified long bone extremities develop the deformities due to weight and strain, and as the radiographic appearances of these areas resemble some of those seen in certain phases of osteochondritis they are liable to be misinterpreted. Some observers therefore regard osteochondritis as a type of chondrodystrophy. A complete radiographic examination of the skeleton will show, as in endocrine disorders, symmetry of the changes at all ages, and an inquiry into the clinical and family history should make diagnosis possible.

Rickets.—The bilateral deformities of the neglected rachitic patient will be recognised on clinical examination and radiograms will show the typical changes.

Preiser's Disease of the Scaphoid

Following injury to the carpus circumscribed areas of osteoporosis may develop in the bones. I have seen these areas, for example, in the carpal bones, and the heads of the metacarpal bones, of men who have worked with compressed air drills for several years. As a rule the trauma is so severe that the patient is forced, by the pain and disability, to seek surgical attention soon after the accident. At this time it will often be found that there is a swelling over the region of the scaphoid which is tender on pressure. All movements of the wrist are painful. A radiogram may reveal no bone change in any of the carpal bones, but sometimes this is due to the position in which it is taken. The best positions to show the outline are (1) with the hand in ulnar deviation, or (2) with the back of the hand on the film, the skin over the scaphoid being the area of closest contact. Fine fissures in the bone may be obscured by the shadows of the overlying bony prominences or the general cancellous structure.

With the lapse of a few weeks all discomfort may have passed and pain is present only on forced hyperextension. As a rule, therefore, the patient does not come for treatment until the wrist is again injured, and though the trauma may have been much less the pain and limitation of movement is much greater. On examination it will often be found that the "anatomical snuff-box" is diminished or obliterated, and this area is very tender on pressure. Any attempt at forced hyperflexion or hyperextension causes pain. If the patient rests the injured hand the acute symptoms may subside, but he often seeks treatment later because of bouts of severe pain disturbing his sleep. Radiography at this stage usually shows a cyst-like area in the scaphoid with a fissure line running through it, but in some cases the cyst does not appear at first to be associated with a fracture line, and serial radiograms of some of these cases considered with their clinical histories suggest that a subsequent injury has fractured the bone through the weakened area. If several small circumscribed areas of osteoporosis were to be seen with X rays soon after the trauma, the radiograms will now show fusion and expansion of this osteoporotic area. Unless the wrist is put to rest the osteoporotic process will extend to the periphery and produce an apparent gap between the fragments. Even when this appearance is present it may be found that on surgical exposure of the carpus the scaphoid seems superficially intact, but incision into the cartilage will reveal fragments of dense bone within.

Osteochondritis Dissecans

The name "osteochondritis dissecans" was coined by König to describe conditions of the knee-joint associated with the separation of a small portion of the articular surface. He thought that as the result of a low-grade subchondral inflammation a fragment of the articular surface was separated from the condyle. As early as 1738 Alexander Munro had observed this condition and suggested that the separation of the loose body was due to trauma.

The lesion is usually found between the ages of 16 and 25, though sometimes later, and it is much commoner in males than females. Often it is bilateral, though one side only may show clinical signs.

Don King,[6] reporting on 24 cases, states that the average age was 18, and the condition was bilateral in 5. Most of the patients had complained of pain and discomfort for a year or two prior to submitting themselves for examination, the average interval being two years. There is usually a history of trauma some years previously, though the patient often seeks medical advice because of acute pain, swelling, and locking of the joint following a recent trifling injury. From histological examination of a number of the "loose bodies" removed King concludes that the lesion is due to necrosis with a low-grade productive aseptic inflammatory response. The "loose body" is, he thinks, caused by separation of a small fragment of the articular cartilage, though with histological examination he shows that the bed of the condyle containing it is covered with newly formed fibrocartilage and the "loose body" contains bone.

I have seen the separation of similar fragments of subchondral bone from the condyle of the femur in cases of tuberculosis of the knee-joint, but in these cases, while all the other bones of the neighbourhood show profound osteoporosis and the outline of the articular cartilage is blurred, the loose body retains the density of normal bone and preserves its sharp outline. Further, in some of the cases of osteochondritis dissecans the surgeon failed to find the "loose body," since it was covered by intact cartilage. My own opinion therefore is that the "loose body" is due to sequestration of a small fragment of subchondral bone. This separation might well be due to trauma and subsequent local vascular disturbances of the fragment. At operation the fragment from the articular surface may be free in the joint, may protrude into the joint but be anchored to its bed by fibrous tissue, or the articular surface may show a localised swelling of the cartilage, which may be fissured or eroded.

The history, as already stated, may reveal that for several years the patient has had intermittent pain, swelling, or discomfort in the knee and it may have been "locked" on several occasions. If the present signs and symptoms have developed immediately after trauma, the condition may be mistaken for rupture of the semilunar cartilage, while in those cases in which there is a long history of pain and swelling, tuberculosis of the knee-joint may be suspected.

The diagnosis of osteochondritis dissecans will be determined by the radiographic appearance. An ovoid shadow, slightly denser than the surrounding bone, will be seen lying in a shallow excavation on the lateral surface of the medial condyle of the femur. (Often it is slightly posterior to the midline.) Between the "loose body" and the condyle is an area of decalcification, and the bony walls of the bed are also denser than the rest of the bone of the condyle. There is no general rarefaction of the bones as in tuberculosis; in fact, unless the "loose body" is sought for, the normal appearance of the bones may lead to the condition being overlooked. As in other forms of osteochondritis, the first radiogram may show that the "loose body" has no increased density and the condyle is undergoing regeneration. It is rare to find these changes in the lateral condyle, but it is not unusual to find similar changes in the opposite femur though these may be symptomless. Changes do occur in the lateral femoral condyle which bear a resemblance, but I have found these only in association with recurrent slipping of the patella. The "loose body" may not always appear on the radiogram as a regular ovoid shadow, for irregular absorption of the calcium in the detached bony fragment results in a shadow with irregular borders or a flaky appearance.

King reported on cases in which, as the result of conservative measures, the condylar defect has been repaired. Sometimes a slight depression is found at the common site of the local destruction in the medial condyle, and this suggests that regeneration may have taken place.

Many other bone conditions present the clinical signs of tuberculosis or tumour. In some of them radiography will supply the evidence for the correct diagnosis and in all of them it will give useful information.

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A HOSPITAL FOR LANCING.—Lancing, in Sussex, which has a population of 8000, is without a cottage hospital, and a movement is on foot to provide one. Worthing Hospital is too small even for its own districts and at Shorelands Hospital, Shoreham, only a few beds are available. The infirmary at East Preston is nine miles away.

GONOCOCCAL VAGINITIS IN THE ADULT

A METHOD OF ISOLATING THE GONOCOCCUS FROM THE VAGINAL SECRETION

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THE theory that the gonococcus cannot survive in the adult vagina for long periods is usually advanced to account for failure to demonstrate this organism in the vaginal secretions. From clinical observations over a period of years we believe that the inflammatory changes in the vaginal mucous membrane which are so constantly associated with acute or chronic gonococcal infection of the cervix render this explanation improbable. The object of this paper, therefore, is to show that the gonococcus may, and often does, persist in the vagina, and that it is unaffected by the acidity of the secretion or by the prevalence of secondary organisms. Furthermore, it will be shown that the organism may be isolated from the vaginal secretion by a method we have devised.

The wall of the adult vagina, consisting as it does of a tough stratified epithelium with some occasional small mucous crypts but no true glands, is believed to possess or to develop a high degree of immunity to infection with the gonococcus and other pathogenic organisms. The canal is normally moist, and this is due to a whitish fluid which acts as a lubricant and consists mainly of desquamated cells. Protection against gonococcal infection is believed to be afforded by the acidity of this secretion, due to the production of lactic acid by the activity of the rod-shaped bacillus of Döderlein. It is generally agreed that gonorrhœal vaginitis does not exist alone, but is always associated with, or is secondary to, infection of the cervix or urethra.

The susceptibility of the vaginal mucosa to gonococcal infection decreases with age. Children are known to acquire the infection only too easily; adult girls are apparently less susceptible and competent observers have stated that gonorrhœal vaginitis is seldom seen in women who have borne children. Bumm[1] held that the vaginal mucous membrane becomes immune to the gonococcus after puberty, and according to Jadassohn[2] the vagina hardened by habitual sexual intercourse is only exceptionally infected. The statistics of Baermann[3] show that only 4·9 per cent. out of 1124 prostitutes were found to have infection in the vagina. On the other hand, Gurd[4] frequently obtained cultures of gonococci from vaginal swabs. In the opinion of Penrose[5] the vaginal fornices and especially the posterior fornix are sites where a gonococcal infection tends to become localised and to persist.

SYMPTOMS AND SIGNS

In the acute stage of gonorrhœa in the adult woman some degree of involvement of the vagina is a common finding, and in the nulliparous patient to whom sexual intercourse has not been habitual, it may give rise to symptoms of some severity. Besides a vaginal discharge, there is often considerable pain and discomfort on walking.

On examination the discharge is seen to be profuse and purulent, and there are obvious signs of vulval and urethral infection. The insertion of a vaginal speculum causes pain and the whole of the vaginal wall appears bright red, smooth, and glistening. Later, the lining epithelium may desquamate and form an adherent caseous coating to the free surface. Obvious signs of infection of the cervix uteri are usually present.

In the more severe cases of longer standing the papillæ of the vaginal mucous membrane are swollen and studded throughout with granulations, giving rise to a granular roughened appearance of the entire vagina. In the less severe type of case the inflammatory process may appear to be limited to the vaginal fornices, particularly the posterior fornix, and the upper part of the posterior vaginal wall. This localised vaginitis is common in the milder types of gonococcal infection, and especially in multiparous women. It is also seen as a stage in the progress towards cure of the generalised infection under treatment.

A form of vaginitis occurs in young girls which is particularly severe, painful, and intractable. In these cases, when specimens are obtained from the usual sites by the ordinary smear and culture methods, all attempts to isolate the gonococcus generally fail. Such cases are usually classified as "non-specific vaginitis" and, owing to the unsatisfactory response to treatment, are a distressing feature of all female venereal clinics.

Apart from this intractable group of infections, the vaginal mucous membrane, from the os uteri externa to the aditus, appears to develop a remarkable degree of immunity to gonorrhœa as the acute stage of the infection subsides. At this point the clinician may note a strong contrast between the inflamed and eroded cervix and the pale healthy looking vaginal mucosa. In the fornices, however, the inflammatory process may persist for a considerable period, and often lasts as long as the cervical infection. In such a case careful exposure of the posterior fornix will show the mucous membrane to be velvety, smooth, glistening, and bright red in colour. There is usually a thick purulent secretion in this area.

Faulty drainage and postural reinfection from the infected secretions of the cervical canal are contributary causes of this localised but persistent inflammation; yet the tardy response to treatment which this region shows seems to indicate some deficiency in local immunity. Many resistant cases and some "relapses" may be traced to neglect of this area in treatment.

THE CULTURAL METHOD

In attempting to isolate the causative organisms in these persistent vaginal infections we have employed the egg albumin agar medium, devised by Orpwood Price,[6] plated out in Petri dishes to give a large surface area for inoculation. The media in these dishes is sloped so that excessive discharge and moisture are able to drain away. This helps to prevent the surface of the medium from being overrun by secondary organisms.

The specimen is obtained by introducing a Cusco's vaginal speculum of appropriate size and pressing the blades firmly backwards and downwards into the posterior fornix. The speculum should be warmed before use and lubricants avoided, for these may be detrimental to the growth of the organisms by nature of their composition. In this way it is usually possible, on slightly opening the blades of the speculum, to obtain a quantity of the creamy vaginal secretion and to avoid admixture with the ropy mucus of the cervical discharge. Where difficulty arises in separating the two fluids it is advisable first to clear the cervical mucus with a swab on a Playfair's probe. The vaginal fluid is suctioned into a sterilised slender glass pipette (Wright's) fitted with a rubber teat. As much fluid as possible is obtained and expressed at once on to the surface of the medium. The secret of successful inoculation is *quantity*; tests carried out with small amounts of fluid, such as are obtainable with a platinum loop or a wool-covered probe, are rarely satisfactory.

The plates should be kept in an incubator at 37·5° C. for 30 minutes prior to inoculation and should be removed from the incubator only immediately before use. After inoculation the plate should be returned to the incubator and allowed to remain there for at least 48 hours. A strong mixed growth is obtained, among which the gonococcal colonies are identified by means of the oxidase reaction and then picked off the medium, transferred to a slide and stained by Jensen's modification of Gram's stain. The Gram-negative diplococci thus obtained may be subcultured and a pure strain isolated.

Morphologically and culturally the organisms are identical with the gonococcus obtained in pure culture from the urethra and cervix in acute cases. Gonococcal antigen made from the subcultures will, when titrated against a known gonococcal serum, give marked fixation of the complement. It must be emphasised that one negative plate culture is not satisfactory evidence that the gonococcus is absent. Several attempts may be necessary before the organism is isolated.

CLINICAL APPLICATION OF THE TEST

The diagnostic value of this test in supplementing the results of the urethral and cervical smears and cultures already in routine use may be estimated by analysis of the case reports of the first 263 cases in which it was employed. The total number of cases consisted of 151 married women, 108 single girls, and 4 widows. The 98 cases with positive plates consisted of 49 married women, 46 single women, and 3 widows (Table I.).

TABLE I

			Cases.
Total number of plates	263	Married	151
		Single	108
		Widows	4
Total number of positive plates	98 (36·8 %)	Married	49
		Single	46
		Widows	3

Of the 98 cases with positive plates, 44 were positive in the plates only (the corresponding gonococcal fixation tests, urethral and cervical cultures and smears being negative), and 12 were accompanied by a positive fixation test only. In 17 of the positive plates not only was the fixation test positive, but also urethral or cervical smears or cultures; whilst in 25 the fixation test was negative, but smears or cultures were positive (Table II.).

TABLE II

Plates positive only	44 (43·8 %)
,, ,, and fixation test positive only	12 (12·2 %)
*Plates positive, fixation test positive, also smears or cultures positive	17 (17·3 %)
†Plates positive, fixation test negative, but smears or cultures positive	25 (25·5 %)

* Analysis of the smears and cultures in this group showed:—

Positive urethral cultures	12	Positive urethral smears	2
,, cervical ,,	8	,, cervical ,,	3

† Analysis of the smears and cultures in the second group:—

Positive urethral cultures	14	Positive urethral smears	8
,, cervical ,,	10	,, cervical ,,	7

Naturally in some cases both smears and cultures were positive.

Of the 165 cases with negative plates, 101 were negative in all tests. In 24 there was a negative plate with a positive fixation test only, whereas in 12 the fixation test and smears or cultures were positive.

In 28 of these negative plates the fixation test was also negative, whereas smears or cultures were positive (Table III.).

TABLE III

Total number of negative plates	165 (62·7%)
,, ,, negative plates with all other tests negative	101 (61·2%)
Total number of negative plates with positive fixation test only	24 (14·5%)
*Total number of plates negative with fixation test positive and smears or cultures positive ..	12 (7·2%)
†Total number of negative plates with positive smears or cultures but a negative fixation test	28 (16·9%)

*Positive urethral cultures	7	Positive urethral smears ..	4
,, cervical ,, ..	6	,, cervical ,, ..	3
†Positive urethral cultures	16	Positive urethral smears ..	8
,, cervical ,, ..	9	,, cervical ,, ..	4

TREATMENT

Assuming from the clinical evidence that definite infection is the rule, and from the evidence of the bacteriological results that such an infection is often gonococcal, it follows that local treatment should not be confined to simple irrigation of the cervical canal, but that definite steps should also be taken to eradicate the infection from the vaginal fornices.

In general, it must be urged that all instrumentation and manipulation should be as gentle as possible, and that if antiseptics are used they should not be used in concentrated form. While the vaginal mucous membrane may apparently tolerate quite strong antiseptics without increasing the symptoms or causing discomfort to the patient, our experience is that the use of such chemical irritants will inevitably prolong the duration of infection. Thus we have employed a 25 per cent. solution of mercurochrome, but better results have been obtained with a 1 per cent. solution. Again, a 50 per cent. solution of ichthyol in glycerin is well tolerated, but our results with a 10 per cent. solution have been more satisfactory. Possibly the local immunity processes of the tissues are adversely affected by the stronger concentrations.

The following may be taken as a routine method of treatment of the vaginal mucous membrane and should be carried out in addition to urethral and cervical irrigations. The results will be found to be satisfactory in most cases:—

1. The vaginal fornices are carefully swabbed with cotton-wool pledgets soaked in a sterilised saturated solution of bicarbonate of soda to remove all discharge, mucus, and debris. The surface of the mucous membrane is then dried as well as possible with dry sterilised cotton-wool.
2. The whole surface of the mucous membrane is then carefully swabbed with a 50 per cent. mixture of glycerin and sterile water, or with one of the two weaker antiseptic solutions mentioned above. Careful manipulation of the speculum should ensure, by obliteration of folds and rugæ, that the entire surface of the infected mucous membrane is exposed to the bactericidal agent.
3. The vagina is loosely plugged with a gauze drain about a yard long which has been soaked in 50 per cent. glycerin or glycerin to which 3 per cent. Izal has been added.

It may be necessary to omit the gauze drain in patients who are pregnant, or in those who have recently suffered from inflammatory involvement of the uterine adnexa; in these cases the chronic stage of the infection is usually prolonged.

The treatment should be carried out daily, but if this is not possible some form of pessary treatment should be instituted. Good results have been obtained from foaming pessaries, such as Spuman with salicylic acid (Luipold-Werk, Munich), a stylus being inserted each night and followed the next morning by an antiseptic douche.

CONCLUSIONS

(1) Gonococcal infection of the vaginal mucous membrane not only occurs in the acute stage of gonorrhœa, but also persists in chronic form in the later stages of the disease. Thus in 53 (33·3 per cent.) of the 162 gonococcal positive cases the test was applied and the gonococcus isolated from the vaginal fornices in the chronic stage of the disease. The criticism may be levelled that by our methods it is not possible to obtain the vaginal fluid free from contamination by the infected cervical discharge. But the constancy of the clinical findings in the vaginal mucous membrane, combined with the fact that in 56 of our cases the vaginal plates only were positive, the cervical and urethral smears and cultures being negative, constitutes sufficient evidence to outweigh this consideration.

(2) The conspicuous clinical differences seen in the vaginal infection of children and young unmarried women as opposed to multiparæ, and others in whom the mucous membranes have been hardened, is merely a question of extent and severity of the infection. In the former types the whole length of the vagina is involved; in the latter, the infection usually becomes limited to the vaginal fornices.

(3) Severe infections of the vagina due primarily to organisms other than the gonococcus are much less common than is generally stated; the gonococcus is often present, although difficulty may be experienced in isolating it. (We except the group of vaginal infections due to the flagellate *Trichomonas vaginalis*.) In the difficult task of isolating the gonococcus in the "non-specific" group of cases, the vaginal plate method gives more satisfactory results than any other; in our series of 44 cases in which the plates alone were positive, 28 were of the severe generalised type of vaginitis, where repeated tests from other sites had proved negative.

(4) The theory of the "antigonococcal" value of a highly acid vaginal secretion in the adult must be abandoned. In our culture tests no inhibitory action appears to be exerted by strongly acid secretions. On applying a rough test of the reaction of the vaginal fluid, by litmus paper, of 100 cases in this series, 93 showed an acid reaction, 3 were alkaline, and 5 neutral.

(5) It is essential to utilise all the known tests in a suspected case of female gonorrhœa if a correct and certain diagnosis is to be established. If this vaginal plate method had not been employed 44 cases would have received an incorrect diagnosis.

(6) Treatment should be directed equally to the vaginal fornices as to the cervical canal and urethra if good results are to be obtained.

(7) This improved cultural method is valuable and essential not only in the diagnosis of gonorrhœa in the female, but also in the establishment of cure after treatment.

Our thanks are due to Dr. I. N. Orpwood Price, who has been responsible for performing the pathological tests.

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achlorhydria was present at the second test-meal. (Fig. 3.) Although histamine was not injected, it seems unlikely that free hydrochloric acid would have been secreted by its injection, as the total acidity at no time exceeded 8 c.cm. of N/10 NaOH per 100 c.cm. of gastric juice. In my experience histamine has never stimulated a secretion of free hydrochloric acid if the total acidity at any time throughout the test-meal does not exceed 10 c.cm. of N/10 NaOH. Fig. 4 represents the final test-meal, when the typical curves as described for Fig. 2 is obtained.

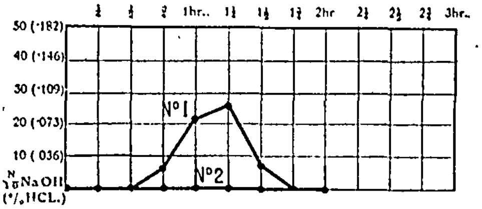


FIG. 3.—Case C. D. Curves of the secretion of free hydrochloric acid in November (No. 1) and in December (No. 2) one month later.

Coincident with changes in the secretion of free hydrochloric acid, definite alterations were found to be taking place in the motility of the stomach in these cases. It was found that an obstruction was developing at the pylorus. To demonstrate more clearly the development of this pyloric stenosis the following particulars are given in the accompanying Table : (*a*) the volume of resting juice obtained after complete starvation (including fluid) for twelve hours ; (*b*) the presence or absence of charcoal given twelve hours previously ; (*c*) the residue of the pint of gruel at the end of two ½ hours after 15 c.cm. had been removed every fifteen minutes.

Table of Test-meals showing Development of Pyloric Stenosis

CASE 1

—	Volume of resting juice in c.cm.	Volume of residue.	Charcoal.
November ..	44	Nil	Absent
February ..	55	35	,,
April	280	320	Present
May	720	400	,,
June*	220	340	,,
July	1400	400	,,
August ..	1350	400	,,

CASE 2

—	Volume of resting juice in c.cm.	Volume of residue.	Charcoal.
November ..	68	Nil	Absent
December . (1 month later)	230	160	Present

* In June at midnight, prior to the test, the patient vomited one pint of fluid, and this explains the drop in the volume of fasting contents.

The stomachs were examined in the Bland-Sutton institute of pathology.

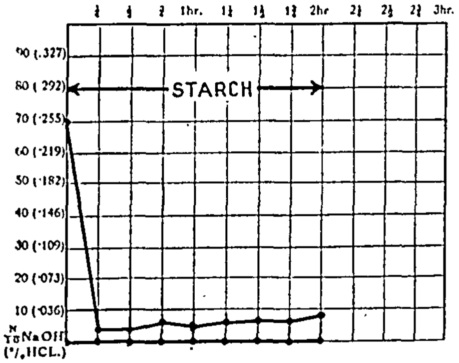
CASE 1.—To the naked eye the stomach was very much dilated and showed extensive involvement of the distal two-thirds by infiltrating new growth with obstruction to the pyloric canal. Sections of the growth showed it to be a scirrhous spheroidal-celled carcinoma. The mucous membrane proximal to the growth appeared somewhat thinned, but contained a fair number of oxyntic cells.

CASE 2.—The naked-eye appearance was that of a large chronic ulcer in the pyloric half with surrounding fibrosis. There was marked dilatation of the stomach with obstruction to the pyloric canal. From the microscopical appearances the pathologist reported that it was a very slowly growing carcinoma of the leather bottle type which had ulcerated and assumed the appearances of a chronic ulcer.

DISCUSSION

The views of Hurst have indicated the rarity of gradual disappearance of free hydrochloric acid in the presence of carcinoma of the stomach, and the fact that very few cases have been reported strengthens his contention. He has maintained that the achlorhydria, which is commonly discovered in carcinoma of the stomach, arose as a result of a gastritis which preceded the development of the neoplasm ; indeed, this gastritis is one of the commonest precursors of cancer of the stomach. I have, however, observed two cases of carcinoma of the stomach in which this alteration in gastric secretion took place.

The cause of the achlorhydria must be either the development of a severe gastritis or the spread of the carcinoma with destruction of the secreting mucous membrane. Of these two causes, the former would seem to be the more likely. The carcinoma is rarely so extensive as to warrant the opinion that it has completely destroyed the secretory glands, and further, achlorhydria has been known to be present with quite a small growth. In my two cases, histological examination of the stomachs showed that the carcinomas, although extensive, did not completely involve the glandular secreting mucous membrane. There is little doubt that the achlorhydria was due to a severe gastritis so intractable that constant lavage failed to produce any amelioration. While noting the change in acidity, it was observed that in both cases pyloric stenosis occurred, and it seemed probable that the stenosis had a bearing upon the other condition. It is suggested then that the cause of the diminution in free hydrochloric acid is an intractable gastritis consequent upon pyloric stenosis. If this were so, one would expect no such alteration in free hydrochloric acid in the presence of a carcinoma without pyloric obstruction. Unfortunately, I have not been able to observe such a case. That pyloric stenosis occurs rapidly is evident from the two cases reported where it can be seen to appear in so short a time as four weeks.



Volume of resting juice = 230 c.cm.
Volume of residue at end of 2½ hours = 160 c.cm.

FIG. 4.—Case C. D. Final curve in December (No. 2). Achlorhydria is present and the curve of the total acidity is shown.

The relative value of the detection of this change in gastric secretion has been discussed by MacLean and Shay and Schloss. They have stated that this development of anacidity is an early diagnostic feature of carcinoma, but they give no information about the operability of their cases when laparotomy, if any, was performed. In the two cases I report there was no doubt that when the first meals were carried out, the carcinomas of the stomachs were so extensive as to make operation impossible. The alterations in the secretions of free hydrochloric acid which were noted in the subsequent test-meals, while an interesting observation, cannot therefore be looked upon as having any therapeutic value.

CONCLUSIONS

(1) Two cases of carcinoma of the stomach have been described, in which free hydrochloric acid gradually disappeared; (2) parallel with changes in the free hydrochloric acid secretion were those in the motility of the stomach, and pyloric stenosis developed n both patients; (3) the cause of this diminution in ree hydrochloric acid appears to have been an ntractable gastritis secondary to the development of yloric stenosis; (4) this alteration in the curve of he secretion of free hydrochloric acid was of no ignificance from the point of view of an early liagnosis of carcinoma, for in both cases the carcinoma was advanced at the time the first test meal was erformed; (5) observations upon the development f pyloric stenosis showed that this could be rapid, uite advanced stenosis developing in four weeks' ime in one case.

My thanks are due to Prof. E. C. Dodds for his criticism, rof. S. L. Baker and Dr. R. W. Scarff for the histological eports, and Mr. E. W. Riches and Dr. T. I. Bennett for ermission to investigate their cases.

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THE CAUSATION OF QUININE BLINDNESS

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Two main views are still held with regard to the ay in which quinine affects the visual apparatus. It supposed (*a*) that it causes a spasm of the retinal essels and that the symptoms are due to the chæmia thus produced; or (*b*) that it acts directly n the retinal elements, the spasm of the vessels being econdary to this. No adequate reason is, however, iven for the spasm. It can hardly be due to disuse, nce it may come on soon after the taking of the drug.

On the tissues of the body generally quinine does ot act as a vaso-constrictor; if anything, it tends to ilate the vessels. Thus, C. R. Marshall[1] writes:—

> "On blood-vessels, quinine exerts an influence similar that on other contractile tissues. Perfusion of solutions quinine salts through the vessels of excised organs of arm-blooded animals (Kobert, Thomson), or through old-blooded animals (Wild), produce marked dilatation."

he fact that quinine is not a vaso-constrictor in the ody generally is strong evidence against its acting rimarily on the retinal vessels. Moreover, a large umber of cases have been described by observers of he first repute, where there was blindness without onstriction of the retinal vessels (von Graefe,[2] allantyne,[3] Fox [4]).

It is well known that quinine inhibits the oxidising power of protoplasm. "Thus it prevents the oxidation of guaiac resin when hydrogen peroxide or turpentine and some form of living protoplasm are added to a fine suspension of it in water. Under ordinary circumstances this turns blue at once; after the addition of quinine no change or but a slight one occurs." Also quinine diminishes the oxidising power of the blood and prevents or diminishes the reducing action of the tissues on the blood (Marshall). Binz (to whom we owe much of our knowledge of quinine) believed, indeed, that its action as a cell toxin was due to this interference with oxidation and showed that the changes produced in the lower organisms by quinine were similar to those produced by want of oxygen.

Whether we accept Binz's theory or not is immaterial. The point I wish to emphasise and I believe all are agreed on, is that it does interfere with the oxidation of the tissues.

THREE CAUSES OF SPASM OF THE RETINAL ARTERIES

An ophthalmoscopic picture of greatly narrowed arteries and a white disc, produced as an acute condition, much like that resulting from the taking of quinine, is seen following gastro-intestinal and other hæmorrhage, and also after division or block of the arteria centralis. It seemed to me that there might be some common cause of this phenomenon, and the fact that quinine hinders oxidation seemed to supply a clue. Hence I was led to inquire whether there was any evidence that in the other conditions diminution in the oxygen-supply might be the cause of the spasm of the retinal arteries and the white disc.

Loss of sight following *hæmorrhage* is commonest after hæmorrhage from a gastric ulcer. In the large majority of cases it is a recurrent hæmorrhage, and usually the blindness does not follow immediately on the hæmorrhage but comes on a day or more later, most commonly between the third and seventh day (Terson [6]). Amblyopia after traumatic hæmorrhage is extremely rare.

When a large hæmorrhage occurs anywhere in the body, the blood volume is made up much more rapidly than the corpuscles. It follows from this that for some time after the hæmorrhage the hæmoglobin percentage will be lower than at the time the hæmorrhage took place. In the normal person, in whom most traumatic hæmorrhages occur, the oxygen-supply to the tissues will gradually improve owing to the increased blood flow and after the blood volume is made up the hæmoglobin content will rise. In a gastric hæmorrhage, on the other hand, conditions are different. The hæmoglobin content of the blood of patients suffering from a gastric ulcer is on an average 75 per cent., as found by Friedman[7] in 50 cases afterwards verified at operation. After a gastric hæmorrhage, according to Crohn,[8] the percentage falls steadily for several days, and may go as low as 20. In a case of Whiting's[9] which resulted in optic atrophy the hæmoglobin fell to 15 per cent.

If we consider the probability that there are smaller unnoticed hæmorrhages—for Osler[10] says that the bleeding from a gastric ulcer usually recurs for several days—it is reasonable to suggest that in cases of blindness following hæmatemesis the oxygen-supply to the tissues generally and to the retina is actually less a few days after the initial hæmorrhage than at the time of its occurrence. Moreover, the onset of blindness is very often accompanied by giddiness, faintness, and even loss of consciousness, which are themselves symptoms of general oxygen-lack.

With regard to spasm following *block of the arteria centralis*, Uhthoff,[11] in two eyes which had to be removed for new growths but in which the media were clear enough for the fundus to be seen, had the opportunity of studying the effect of clamping the optic nerve (and thus the central artery) in the human. He found that each time he put the clamp on the optic nerve behind the globe there was a latent period of 5–10 seconds before the retinal vessels went into spasm. The same latent period was noticed when he divided the nerve. This seems to point to the spasm not being produced by the cutting-off of the blood current directly, but by the oxygen-supply of the retina falling below a certain point.

In the three conditions considered, therefore, the common factor seems to be an extreme oxygen-lack, and I suggest that this is the cause of the spasm of the retinal arteries. In quinine poisoning the cells are prevented from taking up oxygen, and probably also the blood gives off its oxygen less readily. In gastric and other hæmorrhages the oxygen-supply to the tissues is greatly reduced, and the same is necessarily true when the blood-supply to the retina is cut off.

ACTION OF QUININE

In the action of quinine on the retina two stages may, I think, be distinguished. In the first the quinine in its capacity as a general protoplasmic poison acts on the retinal elements directly. The loss of vision here may be slow or rapid, depending on the dose of quinine and the susceptibility of the individual. The second stage depends on the spasm of the retinal vessels, and I think is probably always acute in onset.

This two-stage action of quinine on the retina is borne out by cases in which it has been possible to study the symptoms and signs from the first. As Elliot[12] writes: "If a surgeon were on the lookout for the well-known symptoms from the first, it seems more than probable that he would find the loss of sight heralded by amblyopia, and constriction of the field of vision. This has certainly been the case in a few instances when close observation was possible." Moreover, contraction of the field of vision has been noted in medicinal doses of the drug.

Another problem which calls for explanation is the curious recovery of central vision. The patient may in fact eventually be left with normal central vision but with an extremely contracted field. It has been suggested that quinine affects the rods more than the cones, but this hardly provides a satisfactory solution. It seems much more probable that the answer lies in the vascular arrangements of the macula and fovea. The blood-supply to the ganglion cells is via the arteria centralis, and it is presumably by this route* that the quinine (at any rate mainly) reaches these cells. The small vessels which run radially from the superior and inferior macular vessels form (according to Leber) capillary loops which leave an avascular zone from 0·4 to 0·5 mm. at the fovea, and the rod-free area of central cones (bouquet des cones centraux of Rochon-Duvigneaud)[13] which subserve central vision occupy an area whose diameter varies from 0·15 to 0·2 mm. Thus the ganglion cells connected with the most central cones (which lie next the ganglion free central area) will be those which are furthest from their blood-supply.

It seems very probable therefore that the ganglion cells in the avascular area will be the last to be affected by the quinine and will presumably receive it in least concentration. Indeed, Druault[14] in his experiments on dogs found the macular ganglion cells much less affected than the peripheral ones.

The investigation of which this is a preliminary report is being carried out in the department of physiology, University College; and the pathological department of the Royal Westminster Ophthalmic Hospital. It has been made possible by a grant from the Medical Research Council.

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A CASE OF INFANTILE COXA VARA

WITH NOTES ON THE ÆTIOLOGY

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THIS case may be worth recording on account of the "text-book" radiological appearance of the head and neck of the femur, showing the triangular fragment of bone typical of infantile coxa vara, first described by Elmslie in 1913.[1] Consideration of the ætiology raises several interesting questions about the ossification of this part of the bone.

A girl, aged 9, was noticed at school to be limping. She had no pain and very little disability, but the parents were requested to have medical advice. They had never considered the limp serious, and did not know when it first started, but thought it had been getting worse during the past six months. On examination the child was found to have a rolling gait with a fairly well-marked limp. There was 1 in. shortening of the left leg, with wasting of muscles of the left thigh. Movements of the left hip—50 per cent. limitation abduction, some limitation of adduction, and rotation. There was a compensatory scoliosis, easily corrected. Otherwise the child was normal and healthy. Radiography showed a left-sided coxa vara, with a triangular fragment of bone in the neck of the left femur (Fig. 1).

The case thus presented a typically insidious onset. From the history no accurate idea could be formed as to when symptoms had first appeared. There was no recollection of injury; indeed, the only incident in the child's life even remotely suggesting a serious trauma was the fact that she was born before the arrival of a doctor. The age at which symptoms first appear is usually stated to be between 5 and 10, and this child was 9. Examination showed the clinical features of a coxa vara, with nothing to indicate its cause. The diagnosis rests on recognition of the triangular fragment of bone in the neck of the femur seen on the radiogram.

A subtrochanteric osteotomy was performed, and the leg immobilised in suitable abduction by a double hip spica plaster. This treatment is on the same lines as that suggested by Fairbank.[2]

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* I thought at first that this might be explained if the quinine acted on the retina via the vitreous, for the quinine would get into the vitreous via the ciliary body and would presumably affect the peripheral retina before the macular region. To test this, Dr. C. H. Hampshire kindly examined for me the vitreous of several dogs which had had quinine hydrochloride injected subcutaneously. In one case only was it thought that a trace of alkaloid could be demonstrated in the vitreous. But doubt was cast even on this when it was found that the normal vitreous fluoresced under filtered ultra-violet light even after being extracted with boiling ether and shaken with 2 per cent. sulphuric acid.

ÆTIOLOGY OF THE CONDITION

In considering the ætiology of infantile coxa vara the difficulty is to explain the presence of the triangular fragment of bone typical of the condition. Broadly speaking four possibilities suggest themselves.

(1) It might be the result of *trauma in infancy*, which passing unnoticed at the time, leaves a fracture which fails to unite by bone. This theory is open to several grave objections. First at birth the epiphysial line between the shaft and head is horizontal, and the neck is very short and thick (Fig 2, A). The anatomy of the whole region at this stage is against the possibility of a fracture being easily produced either close to the epiphysial line or at the neck. Then about one-third of the recorded cases are bilateral, and there seems even less possibility of an exactly similar trauma occurring on both sides, and without other signs, in a region which is not of a shape which suggests that it would be liable to trauma of any sort. I find no record of a child with infantile coxa vara having been treated for an injury in infancy; in the recorded cases there is a uniform absence of history of trauma. It is difficult, therefore, to believe that the condition is of traumatic origin.

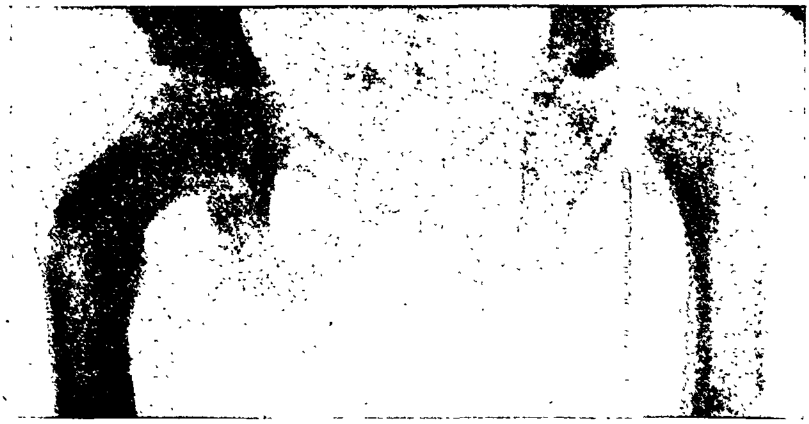
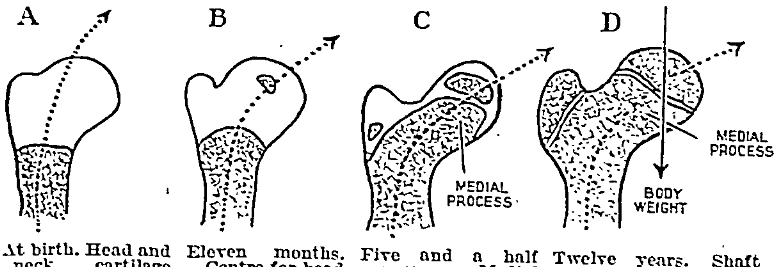


FIG. 1.—Radiogram showing left-sided coxa vara. The white line points to the centre of the triangular fragment of bone in the neck of the femur.

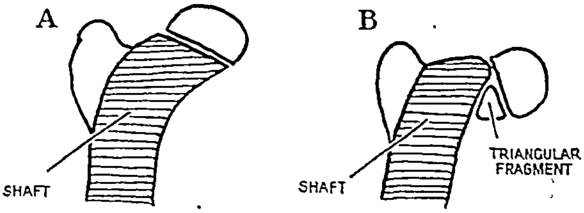
(2) There is nothing in the history of these cases to suggest any *metabolic disorder*. The primary lesion is limited to the femoral neck, and the patients are otherwise healthy with nothing to suggest any disease of the nature of rickets. This was so in the case here recorded; only in the femur did the child show any abnormal bony changes.

(3) The most probable explanation is *abnormal ossification of the neck of the femur*. In considering the development of the neck of the femur great stress is laid by anatomists on its being essentially a continuation of the shaft which grows upward and inward carrying the head like a cap on its extremity; it forms an angle with the main line of the shaft which is more open in infancy and closes as growth continues until in the adult it is about 120°. Prof. Walmsley[3] attaches great importance to the formation of a diaphysial spur or medial process of the neck which extends along the under surface of the head (Fig. 2, C and D). The head is, therefore, not only carried on the end of the shaft, but supported from below by this medial process. The formation of this spur increases the obliquity of the epiphysial line, making the shearing force of the body-weight act across this junction between the neck and head (Fig. 2, D). The space normally occupied by the medial process is in this case of infantile coxa vara occupied by a triangular fragment of bone. Fairbank[1] has suggested that in such cases this process may be formed from an extra centre of ossification, constituting a third element in the neck, and that this element, still ununited, is shown as a triangular fragment on radiography. I cannot find records of any animal in which such a third element in the ossification of the femoral neck has been observed. Walmsley's work on the ossification of the head of the femur tends to show that the introduction of a separate centre of ossification would nullify the morphological significance of this medial process.



At birth. Head and neck cartilage thick and short: not easily injured. Eleven months. Centre for head appears. Five and a half years. Medial process forming. Twelve years. Shaft has grown to form neck.

FIG. 2.—Diagrams illustrating formation and function of the medial process.



Normal. Upward growth only.

FIG. 3.—Diagrams illustrating suggested causation of triangular fragment in coxa vara.

I think that the coxa vara, with the triangular fragment of bone in the femoral neck seen in these cases, might be explained by an abnormality in the direction of the growth of the femoral shaft. The normal direction of growth is indicated in Fig. 3, A, where the neck is seen to form an angle with the main direction of the shaft.

Should the shaft grow upwards but not outwards (Fig. 3, B) there would be two results. First the head, no longer supported by the medial process, would sink down under the pressure of the body-weight, and a coxa vara deformity would result.

Secondly, there would be a triangle of cartilage which was ossified neither from the head nor from the shaft. Prof. Harris's work [4] on the formation and growth of bone indicates that such a fragment of cartilage could not persist as cartilage but must "degenerate" *into bone to obtain a blood-supply. Thus a fragment* would be visible on radiography, and if produced in this way the fragment must be triangular in shape (Fig 3, B).

It has been suggested that this triangular appearance may be an optical illusion, produced by an abnormal antero-posterior or postero-anterior obliquity of the epiphysial plane between the head and neck of the bone. Such triangular effects are sometimes seen, most commonly in the shoulder-joint, in X ray photographs. In the present case, however, the triangle seems to be a separate fragment on careful stereoscopic examination, and persists in all views of the bone, even when taken from different angles. It is therefore unlikely that it is not a separate fragment of bone.

I am indebted to Mr. B. H. Burns for permission to publish this case, and to Mr. S. T. Irwin, of Belfast, for his valuable comments.

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FURTHER OBSERVATIONS ON THE "DIGESTIBILITY" OF COMMON FOODSTUFFS AS DETERMINED BY RADIOGRAPHY

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AND

K. J. L. Scott, M.D. N.Z., M.R.C.P. Lond.

HON. PHYSICIANS TO THE WOKING VICTORIA HOSPITAL

The following experiments are a sequel to the work described in The Lancet of Jan. 5th, 1935 (p. 21).

The *method* was the same as used previously, half an ounce of barium being mixed with the food, to render it opaque, and the stomach being watched carefully by frequent X ray screening. The meals were all taken in the early morning to ensure the stomach being empty. The same subjects were used with the addition of one or two other volunteers. Four children of ages 5 to 8 were also examined.

Sugars when examined in detail gave some very surprising results, as *Table I. shows. It appears that* the emptying-time for sugar depends almost entirely on the amount of water taken with the sugar. Cane sugar with a small quantity of water takes more than half as long again to leave the stomach as the same quantity of sugar with ten times as much water. Glucose disappears from the stomach *less* quickly than cane sugar. Honey alone takes 4 hours to leave the stomach, but with half a pint of water leaves that organ in 1½ hours, as quickly as cane sugar. Presumable if cane sugar and glucose had been taken dry the emptying-time would have been much longer.

The fact that sugar in solution is absorbed so much more rapidly is a useful point to remember in the treatment of acidosis and hypoglycæmia.

One of us had a striking clinical confirmation of this a few weeks ago while playing golf with an opponent who suffered from diabetes. At the 12th hole the play of this gentleman became erratic, and he had to sit down as he said the landscape had become "wavy." In point of fact his morning dose of insulin had taken full effect. When asked if he had any sugar with him, his reply was, "Oh, yes, I've eaten several knobs of sugar, but there isn't any water, so it will be half an hour before I can go on, I'm afraid." He then volunteered the information that if he drank water with the sugar, he would feel all right again in a few minutes. We have since reduced his morning dose of insulin on golf days.

TABLE I

Food taken.	No. of subjects.	Emptying-time for each in hours.	Average.
Cane sugar 2 oz. .. .. Water 1 oz.	3	2½ 2¼ 2½	2⅜
Cane sugar 2 oz. .. .. Water ½ pint.		1½ 1½	1½
Glucose 2 oz. .. .. Water ½ pint.	3	2 1¾ 1½	1¾
Honey 2 oz.	4	4 5 3½ 3¾	4
Honey 2 oz. .. .. Water ½ pint.	3	1½ 1½ 1½	1½

Two children were given sugar meals and their stomach emptying-times determined. The results are given in Table II., and comparison made with the emptying times for adults.

TABLE II

Sex.	Age.	Food taken.	Emptying-time—	
			In hours.	For adults.
M.	8	Sugar 2 oz. Water ½ pint.	4	1½
M.	6	,, ,,	3¾	1½

It would perhaps have been better to give these two young boys doses of sugar proportionate to their age. But even so the difference in stomach emptying-time as compared with the adult is astonishing. The child's stomach does not deal with sugar nearly as rapidly as the adult's.

The stomach emptying-time for the various forms *of milk are shown in Table III.*

TABLE III

Food taken.	No. of subjects.	Emptying-time for each in hours.	Average.
1. Rich raw milk col. ..	3	3½ 3½ 3½	3½
2. *Skim milk cold*	2	2¼ 2¼	2¼
3. Rich milk boiled ..	3	2½ 2¾ 2¾	2⅝
4. Citrated milk	3	3 3½ 3¼	3¼
5. Peptonised milk ..	2	4 3½	3¾
6. Milk with sugar 2 oz. ..	1	3½	3½
7. Alkaline milk	2	3¼ 3¼	3¼
8. Milk boiled with Robinson's patent barley ..	4	3¼ 3¼ 3 2¾	3
9. Ditto, cold	2	3½ 3¾	3⅝

Notes.—(4) Sod. cit. grs. 2 per oz. was dissolved in a few oz. of the milk by warming and added to the main quantity. (5) Fairchild's powder used with 2½ oz. water and added to the warmed milk as maker's instructions. (7) Calc. carb. grs. 20, sod. bicarb. grs. 40, mag. carb. grs. 20. (8) Patent barley ¼ oz. added to the milk and boiled 2 minutes. (9) Patent barley ¼ oz. stirred into the cold milk.

The milk, except in the case of skim milk, was rich raw milk. Half an ounce of barium and half a pint of milk was used in all cases, except for alkaline milk, when a similar quantity of bismuth carbonate was used instead of the barium.

Cold skim milk—that is, milk with the greater portion of its fat removed—took 2¼ hours as compared with 3½ hours for cold whole milk. Whole milk boiled took distinctly less time to leave the stomach than similar unboiled milk. Milk boiled with patent barley must be compared, of course, with boiled whole milk, from which it appears that cereal additions actually increase the stomach emptying-time. None of the methods of modifying milk curd that we have tested, appreciably reduce the stomach emptying-time. Simple boiling is the only method we have found that shortens the time of stomach digestion of milk.

Two further experiments with milk were made on children (Table IV.):—

TABLE IV

Sex.	Age.	Food taken.	Emptying-time in hours.	Emptying-time for adults.
F.	7	Rich raw milk ½ pint. Barium ¼ oz.	3¾	3½
F.	5	„ „	4	3½

These experiments show that the emptying-time for milk in children is much shorter than in adults, when one takes into account the disproportion between the amounts given and the size of the stomach. We showed in our earlier paper that the adult stomach takes no less than 6½ hours to deal with a full pint of cold raw milk. These figures suggest that the stomach loses its capacity to deal quickly with milk as it grows older.

Patent milks, dried and condensed, were not tested. They are milks from which the water has been more or less removed, and sugar or starch added. It is clear from the observations quoted above that the emptying-time for any one of these will depend merely on its fat content.

Observations on the taking of fluids before and after meals gave interesting results (Table V.).

TABLE V

Subject.	Meal.	Stomach emptying-time in hours.	
		Fluid 5 minutes before.	Fluid 5 minutes after.
A	Tea, sausages, bread and butter.	4½	3¾
B	Coffee, cereal, milk 2 oz., egg, toast, butter.	4½	3¾
C	Coffee, eggs, toast, butter, marmalade.	4	3½

In these experiments exactly the same meals were taken on two consecutive Sunday mornings by each of the three subjects examined. On the first occasion the fluid part of the meal, half a pint of tea or coffee, was taken five minutes before, and on the second occasion five minutes after the meal. Except in the case of subject B the rest of the meal was taken dry. The effect on stomach emptying-time was extraordinarily constant, the time of stomach digestion in each case being reduced by half to three quarters of an hour. If the fluid had been taken half an hour before the meal, it is possible that the stomach emptying-time would have been found to be considerably longer.

CONCLUSIONS

(1) None of the usual methods employed to increase the "digestibility" of milk have much effect in reducing the emptying-time of the stomach, except simple boiling. (2) The child's stomach deals with milk relatively more quickly than that of the adult, and with sugar more slowly. (3) Sugar is much more rapidly absorbed from the stomach when fluid is drunk with it. (4) The taking of fluids *after* meals materially hastens the passage of food through the stomach.

Clinical and Laboratory Notes

ACUTE INGUINAL ADENITIS SIMULATING STRANGULATED FEMORAL HERNIA

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THIS case caused confusion between two conditions commonly at opposite diagnostic poles.

A robust-looking stevedore, aged 37, was carried into the Albert Dock Hospital in the afternoon of April 3rd, 1935. At the age of 14 he had developed a tuberculous right knee as a result of which he had an ankylosed joint with a chronically discharging sinus at its lateral side. There had been no change in the condition of the knee in the last 20 years, and during the last 15 years he had not lost, by reason of his health, a single day's work as labourer on the docks. He had never noted a lump in his groin.

On the day of his arrival to hospital he had felt perfectly fit and was occupied in lifting bars weighing 100 lb. from the ground on to a platform. While in the act of raising one of these, he was suddenly interrupted by a sickly feeling followed by "going all of a sweat" and by a severe pain in his right groin. He sat down and shortly afterwards vomited his lunch. Unable to continue further with his work he proceeded to walk to the hospital, but the pain became so severe that he had to be conveyed by ambulance.

Seen at the casualty department of the hospital an hour after the onset of his illness he appeared shocked and complained of a pain which remained localised at its site of origin—present constantly but with severer exacerbations occurring every few minutes, at the height of which he felt nauseated. His temperature was 102·6° F., and his pulse-rate 86; he had several carious teeth and a tongue that was dry and furred. His right knee-joint was immovable and at its lateral side was a small sinus discharging a minute quantity of serous fluid. There was nothing about the appearance either of the knee or of the sinus to suggest a recent acute process. Aside from this the extremity was normal.

He indicated, as the site of maximum pain, an area corresponding to the region overlying the fossa ovalis of the right thigh. At this site a swelling could be felt and seen to rise about half an inch above the general contour of the thigh. It was however so acutely tender, and palpation caused so much distress, that an accurate determination of its character could not be made. There was no impulse on cough. In addition there was moderate rigidity with tenderness of the abdominal wall, most obvious just proximal to the right inguinal ligament and fading away at the level of the anterior superior spine. The urine was normal.

Despite the fever, which did *not* fit into the clinical picture of an early strangulation of an acutely occurring femoral hernia, and also in spite of the fact that the swelling was somewhat lateral to the usual site of emergence of a femoral hernia, it was felt that this diagnosis could not be excluded definitely without exploration. Accordingly under general anæsthesia a low *inguinal* incision was made, and the femoral canal was exposed. It was found empty. Overlying the fossa ovalis the subcutaneous tissue was œdematous and in its substance several enlarged pink inflamed lymph glands were exposed. One of these was removed for biopsy, and on section showed the typical microscopic picture of an intensive lymphocytic infiltration with numerous areas of hæmorrhage within the substance of the gland.

The post-operative course was relatively uneventful. The wound healed by primary union and the swelling tenderness and pain disappeared two days after operation. The temperature remained elevated at 102° for one day after the exploration and then subsided by lysis. An alveolar abscess developed in the right maxillary region and a small furuncle on the right ear, both of which readily disappeared. The patient left the hospital twenty days after operation, feeling quite fit.

There are several features of this case, the reasons for which must remain conjectural. What was the site of primary focus for the lymphadenitis? Radiography of the right hip showed no abnormality, while a plate of the right knee showed firm bony union between femur and tibia and a small sequestrum feeding the sinus. The character of the sinus and its discharge had apparently remained unaltered for years, and certainly showed no acute manifestations during the patient's stay in the hospital. Whether there was any causal relationship between the adenitis and the patient's occupation at the moment when his symptoms appeared so dramatically must also remain in doubt. And lastly, the very prominent gastro-intestinal symptoms which made this case so closely mimic an acute abdominal emergency cannot be explained with certainty.

I am indebted to Mr. D. Denham Pinnock for permission to report this case.

PITUITARY CACHEXIA

(SIMMONDS'S DISEASE)

TREATED WITH ANTERIOR LOBE EXTRACT

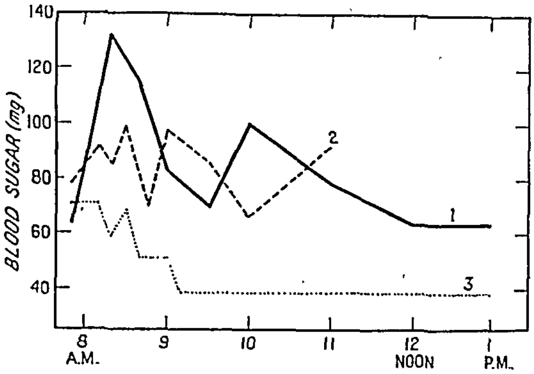
By Leo Rau, M.D.

FORMERLY ASSISTANT PHYSICIAN, RUDOLF VIRCHOW HOSPITAL, BERLIN

Various forms of endocrine therapy have been tried in cases of pituitary cachexia—e.g., thyroid and ovarian extracts—but none have been useful. In the following case an extract of anterior lobe of the pituitary proved efficacious given by mouth. The preparation used was dried anterior lobe containing all its fractions and not merely the identified sex and growth hormones.

The patient, aged 56, had had complete amenorrhœa for twenty years, dating from the birth of her third child. The labour had been normal and the temperature was normal during the puerperium. But after the confinement she lost all the hair on her head and body within a few months. There was also considerable loss of weight, but this had been regained during the past ten years, the gain being associated with œdema of her face. Within the last two years the patient had become very weak, with much fatigue, and was unable to walk. She felt very cold during summer and winter. Neither her memory nor her intelligence were impaired. There was no history of previous illnesses; her husband had met with an accidental death.

On admission the patient was found to have very pronounced œdema of the face and of the eyelids, general hæmorrhagic purpura, a very dry skin, and scleroderma on both legs. Downy hair was entirely absent; hair was missing from armpits and pubes, and was very thin on the top of the head. It was also lacking on eyebrows and eyelids. She was extremely weak, and typical symptoms of myxœdema were present though there were no serious intellectual disturbances. The urine was clear and showed neither albumin nor sugar (specific gravity 1008–1013). The blood pressure was 110/80, and the daily variations in her temperature were from 95·0 to 97·5° F. Radiography showed a pituitary fossa of normal size. Blood count: hæmoglobin 70 per cent., red corpuscles 3,700,000, leucocytes 5500 (polymorphs 42 per cent., eosinophils 3 per cent., monocytes 1 per cent., basophils 1 per cent., lymphocytes 53 per cent.). The B.M.R. (basal metabolic rate) was minus 40 per cent. on admission. Carbohydrate metabolism was upset, and the accompanying chart shows that blood-sugar values obtained under fasting conditions were abnormally low. The peculiar peaks which are common to all the curves are very striking. Patients like this are extremely sensitive to insulin, and in this patient the blood-sugar remained depressed for fully 24 hours after an insulin injection of 10 units despite a plentiful supply of carbohydrates. The cause of this sensitiveness to insulin is not known.



Curve 1 shows the readings obtained after the patient had taken 30 grammes dextrose at 7.50 A.M. Curve 2 shows the effect of adrenaline (gr. [illegible]
Curve 3 shows the effect of i
fasting. After the insulin
hypoglycæmic for 24 hours
grammes dextrose at 9.5 A.M.
on the curve.

The patient was first treated for three weeks with Thyroidein tabl. (Merck) 0·1 g. thrice daily but without success. At the end of this time the B.M.R. was minus 38 per cent. She was then given dried anterior lobe substance by mouth, and after two months' treatment the hair on head and the downy hair had begun to grow again. The œdema had entirely disappeared, and the patient was able to walk again and stand unaided. The B.M.R. had risen to minus 20 per cent. and subsequently reached minus 14 per cent. The fasting blood-sugar values had gone up to 80–85–90 mg. per 100 c.cm., and the daily range of her temperature had risen to 96·8–98·2° F. The improvement in the B.M.R., and the rise in temperature and in fasting blood-sugar values can be explained only by the influence of the anterior lobe treatment. The dosage was 150 mouse units a day for eight months with an interval of one week in every month. After this course of treatment, administration of extract was stopped for ten months, but it had to be resumed. After the extract was stopped she felt very well and fairly strong; but 10 months later she again became weak and was able to walk short distances only. Her hair became thinner and she lost weight again, but there was no œdema.

Swandean Isolation Hospital.—Proposals for extensions to this hospital at a cost of over £24,000 have been approved by Worthing town council.

REVIEWS AND NOTICES OF BOOKS

Nerve Regeneration

The Conduct and Fate of the Peripheral Segment of a Divided Nerve in the Cervical Region when United by Suture to the Central Segment of another Divided Nerve. By Sir CHARLES BALLANCE, Consulting Surgeon to St. Thomas's Hospital. London: Macmillan and Co., Ltd. 1934. Pp. 45. 7*s.* 6*d.*

IN spite of all the evidence that regeneration of a divided nerve occurs by growth of axis cylinders from the central into the peripheral segment, there are still some who admit the possibility that the peripheral portion of the axis cylinders can be reconstituted by some mystical activity of the neurilemma cells. Such a fallacy must surely be exposed once and for all by the account now published by Sir Charles Ballance of the nerve suture experiments carried out in the laboratories of the Royal College of Surgeons of England. When the central end of the cervical sympathetic was sutured to the peripheral end of the cut hypoglossal nerve, and after the time required for regeneration had elapsed, stimulation of the pupillodilator centre in the hypothalamus caused contraction of the muscles of the tongue. Such a result, though yielding interesting corroborative evidence of the presence of the sympathetic centre in the hypothalamus, could be explained on either theory of regeneration of the axis cylinders. But the chief value of Sir Charles's work lies in the histological study of the regenerated nerve, for he has shown that when the cervical sympathetic is sutured to the hypoglossal nerve the regenerated peripheral end contains only fine sympathetic fibres and therefore does not resemble the original hypoglossal nerve. On the other hand, when the central end of the hypoglossal nerve was sutured to the cervical sympathetic, the sympathetic fibres between the site of suture and the superior cervical ganglion were replaced by hypoglossal nerve-fibres, and the nerve became nearly twice the size of the original cervical sympathetic because of the greater size of the hypoglossal fibres as compared with those of the cervical sympathetic. In earlier experiments on nerve suture and regeneration, nerves were used whose axis cylinders were almost identical in size, and it was thus impossible to distinguish them under the microscope. But the use of the cervical sympathetic nerve, which has been sutured in different experiments to many of the adjacent nerves, has made identification possible, and the difference in the appearance of the nerve-fibres is clearly shown in the numerous excellent photographs and drawings which illustrate this book.

Treasury of Human Inheritance

Vol. IV.: *Nervous Diseases and Muscular Dystrophies.* Part I.: *Huntington's Chorea.* By JULIA BELL, M.R.C.P., under the Medical Research Council. Cambridge: at the University Press. 1934. Pp. 67. 10*s.*

A CRITICISM often levelled at eugenics is that we do not know enough about human heredity to justify even such limited action as the giving of genetic advice in individual cases. This reproach will gradually be emptied of valid content as the main categories of diseases recognised as being hereditary are covered by successive volumes of the "Treasury of Human Inheritance." The fourth volume of this monumental production, which is issued from the Galton Laboratory, University College, and is now edited by Prof. R. A. Fisher, is to be devoted to nervous diseases and muscular dystrophies; and if its parts maintain the high standard set by the first one, they will be received with deep interest by the widening circle of persons who see in the utilisation of our knowledge of human genetics the most helpful application of the principles of preventive medicine.

This monograph has twelve plates on which are very clearly reproduced 151 pedigrees of Huntington's chorea. The essential features of each of these pedigrees are set out in short descriptive notes which occupy more than half of the monograph. These notes are preceded by a very full chronological bibliography of 113 references ranging from the year 1658 to 1932. The value of the bare facts recorded in these pedigrees is greatly enhanced by Dr. Bell's introductory chapter. The salient points of the disease are here summarised under the following headings: signs and symptoms; age of onset; duration of disease and age at death; associated diseases; pathological incidence of the disease in the general community; and sex incidence and inheritance of the disease. These paragraphs are lucid, and—the average medical reader will be glad to find—are unencumbered by higher mathematics. As is generally known, Huntington's chorea behaves genetically as a simple Mendelian dominant; yet Dr. Bell's collection contains six pedigrees showing cases of chorea in sibships both of whose parents reached old age without showing any symptoms of the disease. Dr. Bell concludes her introduction by the remark that it would be contrary to all experience of hereditary affections if cases did not occur occasionally indistinguishable from those diagnosed as Huntington's chorea, but providing no evidence of the genetic determination of the disease; and she notes that she has chanced upon a few such cases in the literature. The hereditary nature of Huntington's chorea is so well known that such sporadic cases, though conforming in all respects to the typical picture, might escape the diagnosis of Huntington's chorea; and even if they were diagnosed, they would stand a smaller chance of being written up than would cases occurring in pedigrees showing other affected members.

Dr. Bell and Prof. Fisher deserve congratulation on an admirable production.

Recent Advances in Endocrinology

Second edition. By A. T. CAMERON, M.A., D.Sc. Edin., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba; Biochemist, Winnipeg General Hospital. London: J. and A. Churchill. 1935. Pp. 406. 15*s.*

MORE than any other field in medicine, endocrinology requires the close coöperation of clinician, pathologist, physiologist, and chemist, and their several techniques. The chemist, with his imagination and his precision, is mainly responsible for the speed and the extent of recent advances, and so it is fitting that a chemist should write the volume on endocrinology in Messrs. Churchill's series. Prof. Cameron's second edition brings the story up to August, 1934, and his handling of the riot of recent literature is masterly. New evidence is quoted or summarised simply and clearly, and not obscured by an over-conscientious attempt to be comprehensive. At each growing point he indicates how far the consensus of opinion has advanced, or what tentative conclusion the bulk of the evidence justifies. It is most instructive to watch the critical judgment of the pure scientist applied, with understanding, to the facts and problems of endocrine medicine. The most exciting chapter is, of course, the pituitary one. The anterior lobe is credited with eight distinct hormones, acting on growth, the sex glands, the thyroid, the parathyroids, the pancreatic islets, the adrenal cortex, the mammary glands, and the metabolism of fat, but suggestions are beginning to appear that other organs, such as the adrenal, the placenta (which is now the likely source of "prolan"), and the sex glands can in the reverse direction act on the anterior lobe. This would make the pituitary not the head gland of the endocrine system, but rather a nodal point in its network. We still await, however, a new idea which will give meaning to that network in the way that the conception of reflex action did to the nervous system. Prof. Cameron feels that much spadework must first be done, in the isolation and chemical identification of endocrine principles, before that stage is approached. Meanwhile his fascinating account of recent progress and the present state of knowledge is of the greatest value to all who are interested in endocrinology and especially to physicians.

Speech in Childhood

Its Development and Disorders. By GEORGE SETH, M.A., B. Edin., Ph.D., lately Assistant, Combe Psychological Laboratory and University Psychological Clinic, Edinburgh; and DOUGLAS GUTHRIE, M.D., F.R.C.S. Edin., F.R.S.E., Consulting Aural Surgeon, Royal Hospital for Sick Children, Edinburgh. London: Humphrey Milford, Oxford University Press. 1935. Pp. 224. 10*s.* 6*d.*

THIS work begins with a full and thorough description of the mechanism of speech, and of the problems connected with its representation in the cerebral cortex; the sounds employed in speech, and the methods of their production, are discussed, and the symbols used for these sounds by the International Phonetic Alphabet are explained. The ground having thus been cleared, the authors proceed in a long and interesting chapter to describe the development of speech in the growing child. They find, especially at the younger ages, that the measurement of vocabulary is a valuable means of estimating intelligence, for the results of vocabulary tests correspond closely with those of other performance tests. But retardation in the time of beginning to speak must not too readily be taken as a proof of mental deficiency; not a few cases like that of Thomas Carlyle have been reported, where a child has refused for many months to utter a single word.

The interrelation of speech and hearing is next discussed, and the problem of the deaf mute sympathetically considered; the authors believe that the retardation of the deaf child in respect of his native intellectual endowment is much less considerable than is commonly asserted. He is not deficient in intelligence but is deprived of the principal tool for making his intelligence effective. There follows a well written chapter on the disorders of articulation, dumbness without deafness, cluttering, lisping, and the like; and other chapters on nasal speech, rhinolalia clausa and aperta (the latter including the speech of cleft palate), on stuttering, and on the singing voice in childhood, including the problems of the "breaking" voice.

In a final chapter, on the organisation of speech clinics, the authors insist that a complete change of attitude to the spoken word is required on the part of the teacher and the school. It is most important to encourage attention to clear articulation and refinement of diction, especially in the education of children from homes or districts where the cultural level is low and where harsh and crude vocalisation and lip-lazy, slovenly, and uncouth articulation is the rule. We are entitled to demand of the elementary school-teacher, first, that she should herself be adequately equipped in respect of speech and voice; secondly, that she should have some knowledge of the psychology, physiology, and pathology of speech in children; and, thirdly, that she should give adequate time and attention to speech as such, and as distinguished from mere oral reading.

The book has been written throughout from a sympathetic and thoroughly practical point of view. It covers a great variety of subjects which, on the whole, do not receive adequate attention, especially in this country where "phoniatrie" has not hitherto assumed the position which it is attaining in the United States, France, or Germany. This book will help to draw attention to its claims and to improve the teaching of good diction, with all that this implies, to the rising generation.

Forensic Medicine

Fourth edition. By SYDNEY SMITH, M.D., F.R.C.P. Edin., D.P.H., Regius Professor of Forensic Medicine, University of Edinburgh. London: J. and A. Churchill Ltd. 1934. Pp. 644. 24*s.*

IN this the fourth edition of Prof. Sydney Smith's well-known book the text has been revised, though the original form is maintained and the subject matter retains its concise and informative nature. Among other useful features we would draw special attention to the good account, in the space of a few pages, of the principle and technique of the precipitin test for the origin of blood. The toxicological section, a matter of some 150 pages, has been generally revised. With regard to drugs of the barbituric acid group, which have recently been the subject of some controversy, there is an extremely useful table (taken from Mutch's work) which indicates the diversity of these products: the symptoms, treatment, and post-mortem findings of veronal poisoning are described as representative of this group. An appendix describes medico-legal problems peculiar to the East, with special reference to Egypt, of which subject Prof. Sydney Smith has an unrivalled knowledge.

Gould's Medical Dictionary

Fourth edition. By GEORGE M. GOULD, A.M., M.D. Edited by R. J. E. SCOTT, M.A., B.C.L., M.D., and C. V. BROWNLOW. London: H. K. Lewis and Co., Ltd. 1935. With illustrations and 174 tables. Pp. 1538. 30*s.*

IN a prefatory note to the first edition of this work that industrious lexicographer Dr. G. M. Gould referred to Simon Browne who 300 years ago "took to an employment which did not require a soul, and so became a dictionary-maker." He may have had good grounds for believing that the compilation of a book containing all "the words and phrases generally used in medicine and the allied sciences, with their pronunciation and derivation," is a soul-destroying occupation, but he is at all events entitled to the gratitude of those who have used his dictionaries and these now number nearly 900,000. There may indeed be more, for the figure quoted refers to sales. This fourth edition contains a new table of prefixes and suffixes used in medical terms, tables of bacteria, metazoa and protozoa pathogenic to man and animals compiled by Prof. D. H. Bergey, of Pennsylvania, and—which was quite a brain-wave on the part of the new editors—a transcript of the International List of Causes of Death. The changes and additions have been made by condensation without adding to the bulk of the volume which was already considerable, but for this bulk the present editors cannot fairly be blamed, and it will not be reduced until the coming of an International Academy (for which we have already prayed) which can quietly pack away and give decent burial to the many useless words in the medical vocabulary. There is only one word of criticism which applies not only to this but to all other illustrated medical dictionaries: the selection of objects to illustrate seems singularly arbitrary. On one page we may have the main features of cataracts, on the next a portrait of Darwin, and on another a picture of a separatory funnel. This ragged imagination does no credit to a compilation which has become a model of exact and logical presentation. There is a certain future for a medical dictionary illustrated with the same genius as that which marks the letterpress of the present Gould.

A New Angle on Health

Nature's Provision for the Health and Happiness of Mankind. By Surgeon-Captain D. H. C. GIVEN, M.D., D.P.H., R.N. (Retd.), late Medical Officer in Charge, H.M. Naval Base, Singapore. London: John Bale, Sons and Danielsson, Ltd. 1935. Pp. 160. 7*s.* 6*d.*

THE author of this book, being impressed with the difference in the quantity and character of disease among Asiatic labourers on the one hand, and naval personnel and white civilians on the other, attempts to find an explanation in the way of life of the two racial types. He condemns our Western civilization as built up on selfish greed, industrialism, and parasitism, and reflected in racial decay. While we have succeeded in eliminating the grosser ill-effects of environment, the "health heritage" and "sound body building" are impaired by urbanization, the decline of agriculture, extremes of poverty and riches, overcrowding, overfeeding, underfeeding, and improper feeding (called 'saccharism"). Because of man's biological wrongdoing, modern civilization hangs in the balance. The basis of industrialism is un-Christian and the remedy for our ills is obedience to the precepts of our faith. It seems to be implied that there must be an efflux from towns, a return to subsistence farming and unrestricted reproduction.

The author's method is declamatory and allusive rather than logical. Almost all the incontrovertible facts contained in the book are culled from the Registrar-General's Decennial Supplement to the Report on the Census of 1921, and if it serves no other purpose than to direct attention to that mine of information, it has been worth while. Except for the rather scanty but interesting data as to the health of Asiatic labourers in Singapore, the material of this book is familiar to statisticians, epidemiologists, and public health workers. Some of the explanations of observed phenomena are highly speculative and what the writer considers proof will not be generally accepted as such. It may be right that our rural population before 1760 was healthier than it is now, but it is not proven. We know, at least, that local famine was not uncommon in the days of the manor and village agriculture. If our survival as a race depends on a return to that way of life, the future is indeed bleak. If the author means that our competitive industrialism can be redeemed only by unselfishness and altruism, he is probably near the truth. Much of the statistical by-play is capable of different treatment, which might lead to other conclusions. That medicine and specific prevention are almost helpless against many of the influences of the economic and social conditions of our age is admitted; preventive medicine has reached this conclusion from no new angle and is slowly feeling its way to less revolutionary—or, shall we say, reactionary—means of amelioration than those propounded in the book under review. But more scientific examination of the facts is needed.

The Autonomic Nervous System

Second edition. By ALBERT KUNTZ, Ph.D., M.D., Professor of Micro-Anatomy in St. Louis University Medical School. London: Baillière Tindall and Cox. 1934. Pp. 697. 35*s.*

THE first edition of this book is so well known as a comprehensive guide to the literature of the autonomic nervous system that the main object of the reviewer is to note the additions to the earlier volume rather than to describe the work as a whole.

Until quite recently all the data bearing upon the functions of the autonomic system were collected from the results of physiological experiments upon lower animals, and a noteworthy change in the literature is the steadily increasing number of observations of the sympathetic functions in man. The change is reflected in this new edition of Prof. Kuntz's book. From the point of view of the practitioner its most interesting features are the references to recent work, carried out in the course of the investigation and treatment of patients, on the mechanism of micturition, on the conduction of visceral and referred pain, and on the effects of excision of portions of the sympathetic nervous system. The question of the existence of disease in the sympathetic ganglia in conditions which are benefited by ganglionectomy is well discussed, and the conclusion is reached that the variability in normal ganglionic tissue is so wide that no changes so far described can be identified as the pathological basis of a disease syndrome. In view of this laudably non-committal attitude it is surprising to read a few pages later that "Evidence is rapidly accumulating in support of the theory that pathological conditions of the autonomic nervous system play a rôle in the genesis as well as the course of some of the common vascular diseases, particularly Raynaud's disease."

Though recent advances recorded in it are many and varied, the volume serves only to emphasise the incompleteness of our knowledge of the source and pathway of the autonomic supply to the œsophagus, to the ureter, and to the cæcum and ascending colon, and of the exact distribution and function of the autonomic nerves to the distal colon. It is to be hoped that in the near future some of the anatomical and physiological investigations may be concerned with problems which are of pressing importance to the clinician. A feature of outstanding value in this book is the bibliography, but it should be arranged either in short lists at the end of every chapter or in one complete list at the end of the book: the present method of dividing it into several short lists at the end of the book leads to confusion.

A Text-book of Gynæcological Surgery

Third edition. By Sir COMYNS BERKELEY, M.D., F.R.C.P., F.R.C.S., Consulting Gynæcological and Obstetric Surgeon to the Middlesex Hospital; and VICTOR BONNEY, M.S., M.D., F.R.C.S., M.R.C.P., Gynæcological and Obstetric Surgeon to the Hospital. London: Cassell and Co., Ltd. 1934. Pp. 863. 45*s*.

A QUARTER of a century has elapsed since the first publication of this text-book and its continued popularity and usefulness entitles it to join the austere ranks of "standard works." The authors express the hope that their efforts may be of value to those who are proposing to follow this department of surgery and also to those who are called upon to perform gynæcological operations and have not had the opportunity for acquiring the ripe experience which accompanies long apprenticeship in the gynæcological wards. They could have added, but have not done so, that their book is so compiled as to be a real help to all who practise surgery in this region of the body, no matter what the duration and extent of their experience. Each operation is described in detail and so clearly that misunderstanding is impossible and in many places the reason for undertaking this or that procedure at a certain stage is carefully explained. The indication for each operation, the preparation required for it, and the post-operative treatment are fully described. The illustrations are numerous and some are magnificent. Chapters upon surgical technique, the operating theatre, and operations in private houses are included. The nature and treatment of post operative complications are allotted six chapters or nearly one hundred pages. In order to convey a correct impression of the relative dangers of the various operations the results of the work of twenty surgeons over a period of thirty years have been analysed. It is, however, the first few pages in the book that deserve the most attention and praise. The advice that is here given to the surgeon in regard to his conduct and behaviour toward the patient and in the theatre, the assessment of speed in operating, and the remarks upon operative manipulations could be repeated with advantage in every surgical text-book.

THE FERRIER LECTURE

HUMORAL TRANSMISSION OF NERVOUS IMPULSES

AT a meeting of the Royal Society on June 20th, Dr. Otto Loewi, professor of pharmacology in the university of Graz, gave the Ferrier lecture on problems connected with the principle of humoral transmission of nervous impulses. The following is an abstract of his address:—

In 1921 it was proved for the first time that the modifications of the heart's function, caused by stimulation of its nerves, are due to substances, liberated by the stimulation, called transmitters: acetylcholine and an adrenaline-like body respectively which in their turn bring about the effects of stimulation. This "humoral transmission of nervous impulses" occurs not only in the heart but also following stimulation of all the other vegetative nerves. Whether the phenomenon also happens within the somatic nervous system is not yet settled. The nerves releasing transmitters on stimulation do not influence the *function* of their effective organs otherwise than by this release. But we must attribute to them an influence—independent of the release of the transmitters—on the *sensitivity* of their effector organs to peripheral, directly applied stimuli. The discovery of the humoral transmission of nervous impulses discloses the hitherto obscure mechanism of the effect of nervous stimulation in general, and also particularly of peripheral inhibition.

THE PLACE AND MECHANISM OF RELEASE OF TRANSMITTERS

As to the point of attack of nervous stimulation, i.e., the localisation of the release of the transmitters, there are two possibilities: either the nerve-ending or the effective organ. There are many arguments against the latter possibility, but the former is supported by the following facts: (1) after nerve degeneration the transmitter disappears, even in cases in which the effective organ is not degenerated at all; (2) on stimulation of the preganglionic cervical sympathetic the transmitter is liberated, not within the ganglion cell, but at the synapse—in other words, from the nerve-ending.

Regarding the *mechanism* of the release we have to consider also two possibilities: either the transmitter is newly formed by the nerve-stimulation, or it is made diffusible, being split off from a combination already present in the nerve-ending. The decision between these possibilities cannot yet be made.

The lapse of time between the nerve-stimulation and the response of the reacting organ is extremely short, even in organs like the heart, where the transmitter has to pass a certain distance in order to reach the effector cells. The transmitters disappear somewhat quickly, the time of disappearance being dependent on the type of action which they have to produce.

The point of attack of the transmitters is not some part of the neurone but the functioning, effective organ itself. The fact that the transmitters, when artificially injected, mainly act at points in relation to which they are normally liberated, can be given, as yet, only a teleological interpretation. Since the transmitters can diffuse into the blood from the point of their release, they can, in principle, also affect remote organs, though under physiological conditions this may never happen. Obviously such a distant action is unnecessary, as such needs are fulfilled by the hormones.

DIFFERENCES BETWEEN THE ACTION OF HORMONES AND TRANSMITTERS

Finally, the question arises whether the difference between the action of the hormones and that of the transmitters concerns only the sphere or also the character of their action. The hormones of two of the ductless glands, both being neurotropic and differing from all other ductless glands by properties common to them only—the adrenal medulla and the posterior lobe of the hypophysis—initiate or modify, according to need, the specific *function* of the organs, as the nerves or the transmitters do.

None of the other ductless glands are neurotropic; their development and state depend largely on the anterior lobe of the hypophysis; their secretion is going on continuously and automatically, though partly controlled by the nervous system. Their action is concerned less with the *specific functions* of organs than with *general conditions*—state and metabolism. In other words, there are differences not only regarding the sphere but also regarding the character of the action of the nerves and the transmitters, on the one hand, and that of the hormones on the other.

THE LANCET

LONDON: SATURDAY, JUNE 29, 1935

THE PRACTICAL APPLICATION OF SPECIFIC PROPHYLAXIS

THE reasons why epidemic diseases successfully invade communities at one time and fail to catch on at others, and why they die out when there still appears to be enough inflammable material left to feed them, have been the subject of much interesting speculation among epidemiologists since HIPPOCRATES wrote his Books of Epidemics. The best informed writers of our own time are the least confident that we have found the true explanations. Laws have been postulated which epidemics seem to follow, only to be broken from time to time for no apparent reason. A glimmer of light has been thrown on the problem by the discovery that immunity, as measured by the skin tests of SCHICK and DICK, or by the statistical method used by STOCKS in the investigation of measles, whooping-cough and variola minor, can be acquired without even the mildest symptoms or signs of disease. The behaviour of the common infections of childhood, which smoulder continuously in civilised groups of people and burn more brightly at intervals, seems to be explained by the mixed reaction of the crowd to infection in the forms of typical cases, abortive cases, carriers, and what have been called latent infections. Unfortunately the extent to which any one of these groups of reactors will predominate cannot be accurately predicted, and there is no satisfactory explanation of the changes in virulence which infectious diseases appear to undergo, or the replacement of one type by another. The simple, and therefore attractive, view that man's nutrition and the healthiness of his mucous membranes govern the readiness and the violence of his reaction to infection fails to explain the steady decline in gravity of scarlet fever, the periodical recurrence of virulent forms of diphtheria, and the substitution of variola minor for variola major over a large part of the world. The work of bacteriologists indicates that variations in micro-organisms, and in their symbiotic associations, attend changes in the types of disease, but it is not safe to assume that conditions favourable to these changes do not arise in man himself.

Epidemiological history however shows that the eradication of disease need not wait for an understanding of all its idiosyncrasies. Man wages a winning battle when he can find some weak spot in the enemy's offensive. It is generally agreed that improvements in water-supplies, food handling, sanitation, and personal hygiene account for the decline of typhoid, paratyphoid, dysentery, and the other alimentary infections, and that cleanliness had probably more than nutrition to do with the disappearance of insect-borne diseases like typhus, relapsing fever, and trench fever. There is a school of thought which holds that these "natural" methods account also for the weakened virulence of scarlatina and the infrequency of variola major. But it is not natural to drink water, often chlorinated, brought in pipes from fifty or a hundred miles away, or to use water-closets or to wash the hands after defæcation. These procedures are, in a sense, specific measures against the diseases which may arise from their neglect. A hundred years of effort has shown us that they are unavailing against the large and persistent group of air-borne infections, whose prevalence or recurrence—with the exception of small-pox—has remained uncontrollable, although improved living and increase of knowledge have heightened the chance of recovery. Our good fortune in the matter of scarlet fever is no excuse for inactivity where diphtheria is concerned. Our freedom from variola major for a generation is no guarantee that it will continue.

Two years ago the public health committee of the British Medical Association, being impressed with the inadequate protection of the people of this country against variola major, recommended to the council and the annual representative meeting that the time had arrived to consider whether greater protection would be afforded by voluntary rather than compulsory vaccination. Without committing itself to this view, the representative meeting expressed its emphatic belief in vaccination and revaccination as the only effective methods known for preventing small-pox, and its readiness to consider any additional methods or variations of existing methods of encouraging their more extended employment. The council was instructed to consider any possible variations and appointed a committee not only for this purpose but also to explore the advisability of informing the public as to the various methods of immunisation against other diseases. Realising the magnitude of the subject, this committee has confined its attention to diseases prevailing in this country, or likely to invade it, for which methods of specific prophylaxis have reached a reasonable measure of efficacy and practicability. Its report[1] shows, by extracts from the Registrar-General's Annual Statistical Reviews, that the mortality from diphtheria has declined, especially since the use of antitoxin for treatment began, but the incidence remains unaffected, and the number of deaths in England and Wales still averages about 3000 yearly; the mortality from scarlet fever has fallen much more conspicuously, but there has been no decline in prevalence; measles, too, is much less fatal but still accounts for about 4000 deaths yearly; enteric fever has fallen to negligible dimensions both in cases and deaths; while small-pox as a cause of death has almost vanished, but the recent long wave of variola minor has revealed our vulnerability. An important part of the report is occupied with valuable descriptions of the procedure of immunisation against these several diseases, the prophylactics in common use, and the possibility of reactions and risks in their employment. The committee then discusses the much more debatable question of the application of these methods of prophylaxis to large communities, frankly admitting that what is good for the individual may not be good for the crowd. Weighing the evidence carefully it concludes that the experience of circumscribed institutional groups in this country and of general populations abroad justifies the opinions that harm has not been proved to be caused by creating reservoirs of virulent carriers, and that disease can be eradicated by mass-immunisation. Public prejudice against inoculations should therefore be overcome by every available means, including the constant influence of the family practitioner and educational propaganda by the Ministry of Health, local authorities, and voluntary bodies, stress being laid upon the haphazard and dangerous "natural" process of immunisation which skilled prophylaxis would replace. Lives would be saved if convalescent serum were used against measles, but no influence upon the periodical epidemics of this disease is to be expected. In the case of diphtheria, on the other hand, it should be possible to reduce both the incidence and mortality if rapid and sustained immunisation can be achieved. At present the mortality from scarlet fever is so low and the occurrence of the enterics is so inconsiderable, that it would be wise to confine immunisation to those persons who are abnormally exposed or belong to communities among whom these diseases create special problems.

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[1] Report of Committee on Immunization, including Vaccination (Chairman: Prof. R. M. F. Picken). Supplement to the Brit. Med. Jour., June 22nd, 1935, p. 282.

Finally, the report turns to the question of vaccination against small-pox, showing how the "conscience clause" has reduced the percentage of vaccinations to births from 75·8 in 1905 to 38·2 in 1932. Immunity, since it wanes in each individual, must now be at a low level for the whole community, although revaccinations and the recent incidence of variola minor have induced it or renewed it in a certain number of people. Administrative measures for the detection and control of the disease are highly efficient, but they cannot safely be relied upon to cope successfully with every invasion which may occur in the future. Vaccination and *revaccination* afford the only security, but their compulsory enforcement is not practical politics. The present law is a sham. It is becoming less effective and the semblance of compulsion promotes antagonism. Its abrogation would make little difference. In any case, immunisation against the diseases dealt with in the report, and others which new knowledge may place in the same category, should be considered as one medical and administrative problem. Machinery should be maintained by local authorities for educating the public and putting prophylaxis at their disposal in a safe and convenient form. The power of the Minister of Health to make regulations appears to provide the necessary means of placing this duty upon authorities and of imposing compulsion in times of emergency, even if the present vaccination law is revoked.

The committee has confined itself to the practical consideration of the problems referred to it, touching upon the broader questions of epidemiology mentioned above only where it has been necessary to illustrate the line of thought by which its members have been guided. Workers in different furrows of the wide field of medicine will, no doubt, find some views with which they cannot agree, but the report will generally be welcomed as a moderate and authoritative statement of present-day knowledge and opinion on the prevention of the large group of infectious diseases which have not responded to improvement in environmental hygiene. It also reminds us that vaccination and immunisation can be fitted into public health law, and administration instead of being governed, as vaccination is, by inelastic statutes more appropriate to the old machinery of the poor law.

MATERNITY HOSPITALS

The women of this country are apparently deciding, rightly or wrongly, that they prefer to be confined in institutions rather than their own homes.[1] Every authority which has provided maternity accommodation, whether municipal or "voluntary," has found the demand for it soon outstrip the supply. It may therefore be expected that even more maternity beds will be provided in the near future than have been provided in the past. To those connected with such undertakings the information about the Willesden Maternity Hospital[2] now offered by Dr. G. F. Buchan, medical officer of health for Willesden, will be of great assistance. The building, he recalls, was converted in 1931 from a small-pox hospital into a maternity hospital with 31 beds, and the accommodation was increased to 64 beds in 1934, the total capital cost per bed being £728. Basic principles for the design, construction, equipment, and staffing of maternity hospitals have been laid down in the admirable Memorandum in regard to Maternity Hospitals and Homes issued by the Ministry of Health in 1920, and with the floor areas suggested in this memorandum for the different types of case Dr. Buchan is in substantial agreement, except that he suggests that the 60 sq. ft. per antenatal bed should be increased to 80. Out of the 64 beds at Willesden, the 53 lying-in beds are distributed in two blocks each containing a ward of 14 beds (one with a single-bed ward attached) and one block of two 7-bed wards. Dr. Buchan believes that the latter arrangement, with one single-bed ward and a nursery adjoining, is the best. There are five single labour wards for the first stage of labour, and three delivery wards. An isolation block of four single-bedded wards is provided, though cases of puerperal sepsis are removed to the Isolation Hospital. An antenatal block of 9 beds provides 1 antenatal bed to 4·8 lying-in beds, a proportion found to be a satisfactory minimum. In summary, Dr. Buchan considers that the ideal unit should have "lying-in beds, 60; antenatal beds, 12; isolation beds, 4 (provided that cases of puerperal fever are removed from the maternity hospital); labour block, 2 reception bathrooms, 5 labour beds, 3 delivery beds; operating theatre." On the basis of the Ministry's memorandum 23 nurses would be required to staff the 52 lying-in and antenatal beds, together with extra staff for labour and isolation blocks. The Willesden experience is that, assuming 13 pupil-midwives are equivalent to 8 nurses, a nursing staff of 22 working a 56-hour week suffices for the labour and isolation blocks as well as for the lying-in beds, suggesting that the Ministry's standard is on the generous side.

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[1] The Lancet, April 20th, 1935, p. 942.

[2] Med. Officer, June 8th, 1935, p. 227.

An important feature of the Willesden maternity scheme is that, besides a resident medical officer at the maternity hospital, a consultant obstetrician is in complete clinical charge of all the maternity work including that of the ante- and post-natal centres. The supplementary notes contributed[2] by Mr. ARNOLD WALKER, the obstetrician in question, show that conservative treatment is the rule. Antenatal beds are essential, he holds, for the management of such conditions as the toxæmias, pyelitis, heart disease, antepartum hæmorrhage, debility, and "false alarms." At Willesden induction of labour is almost wholly restricted to cases of toxæmia; it plays no part in the treatment of disproportion in primiparæ. External version under general anæsthesia is no longer carried out; breech delivery in competent hands is considered safer, for both mother and child, than external version in which force is required. Low forceps is not an operation to be encouraged, in Mr. WALKER's opinion, but equally it is not to be feared; while anæmia due to loss of blood is more dangerous, he thinks, than manual removal of the placenta.

Municipal authorities requiring loans for the provision of maternity accommodation must submit their plans to the Ministry of Health, which can insist on essential units being included. It is much to be regretted that voluntary hospitals in similar circumstances do not make more use of the experience of the Ministry; for even quite lately new maternity units have been erected which omit antenatal or isolation accommodation or in which normal, abnormal, antenatal, and abortion cases are jumbled together in the same wards. The position as regards private maternity homes is often even worse, and the private practitioner who conducts a confinement in some of the houses at present registered under this name is taking on himself a very grave responsibility.

OXIDATION-REDUCTION POTENTIALS

IT is now rather more than 150 years since LAVOISIER announced that animal respiration is a process of slow combustion resulting in the liberation of heat; while in England at about the same time PRIESTLEY discovered the carbon dioxide assimilation of green plants. These two fundamental discoveries, the one of oxidation of carbon compounds by atmospheric oxygen, the other of reduction of carbon dioxide in the presence of chlorophyll and sunlight, were enough to show that life itself may be regarded as a process of continuous oxidation-reduction. Nevertheless, the fuller development of this conception had to await much greater knowledge of the sister sciences of chemistry and thermodynamics, and for nearly a century there was no extension of the scheme beyond a realisation of the need for maintenance of oxygen supply for animal life. Thus PASTEUR's "vie sans air"—the discovery that organisms could live without oxygen, by deriving their energy from fermentation-reactions in which this gas did not take part—came as a shock to the scientific ideas of his time. These fermentations, however, were also oxidation-reductions; but here, instead of oxygen being reduced and carbon compounds oxidised, one molecule or part of a molecule of the fermented substance was oxidised at the expense of another which was reduced. In PASTEUR's time it was impossible to formulate these ideas with much precision, and even to-day, despite the brilliant investigations of BUCHNER, HARDEN, MEYERHOF, WARBURG, and many others, there are links in the chain that are unknown or obscure. We may say that a desire to lighten this obscurity has been largely responsible for the modern development of our knowledge of oxidation-reduction potentials, which has been reviewed in a third edition of a recent publication[1] from the laboratories of the London County Council. The first edition was reviewed in these columns in April, 1931; and the rapid appearance of its two successors shows not only that Dr. HEWITT has succeeded in his task, but also that bacteriologists and biochemists take a lively interest in the subject.

The scientific study of these problems falls into two parts—namely, the isolation and chemical study of the enzymes and catalysts concerned, and the quantitative study of these oxidation-reduction systems. It is with the latter we are here concerned. These systems may be compared with electrical storage batteries, in which a thermodynamically reversible chemical reaction may be used to facilitate the transfer of electrical energy. They are characterised by electrical potentials which are often, fortunately, amenable to quantitative measurement by means of the potentials which they set up at an electrode. The electrical potential of such an oxidation-reduction system is akin to the potential set up by an acid-base system in contact with a hydrogen electrode. A number of standard systems have already been studied, and may be used much as standard buffer solutions are used in pH work. In addition, W. M. CLARK and others have extended the measurements to many coloured dyes, of which methylene-blue is the most familiar, which may be used as indicators of oxidation-reduction potential, according to the extent to which they undergo reduction to the colourless leuco-form under prescribed conditions. These substances in CLARK's hands have yielded very precise results, and offer a convenient method of studying oxidation-reduction potential. Naturally, when we turn to the application of these developments to the living cell, with its multitude of partially isolated enzyme and catalyst systems, we find ourselves in a vast new field where some lack of orientation is to be expected. But the many systems which are already yielding to exact treatment constitute a fascinating chapter of progress. It is true that many biological systems known to take part in oxidation-reductions have so far failed to yield to present knowledge and methods, but the scope of this type of study is evident from some recent discoveries. Glutathione, methæmoglobin, cytochrome, vitamin C (ascorbic acid), and adrenaline are all shown to form oxidation-reduction systems. More recently vitamin B_2, and the closely related yellow oxidation enzyme of Warburg, together with other flavins, have been added to the list. There is a suggestion that the physiological activity of the oxytocic hormone of the pituitary gland may be dependent on its behaviour as an oxidation-reduction system (GULLAND and RANDALL), and this suggestion is at present being examined. These and many other applications are of great interest to all connected with physiology and biochemistry, as are recent investigations into the oxidation-reduction level in the medium which is required for the maintenance of growth of cells in tissue culture.

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[1] Oxidation-Reduction Potentials in Bacteriology and Biochemistry. Third edition. By L. F. Hewitt, Ph.D., B.Sc., A.I.C. Published by the London County Council. 1935. Pp. 90. 2s. Obtainable from P. S. King & Son, Ltd., 14, Great Smith-street, London, S.W.1.

The bacteriologist has contributed in full measure to the development of this subject, which has valuable applications in his own field. Almost all bacteria will set up an intensely reducing potential in their cultures; this is not surprising when the extent of bacterial metabolism is realised, a single cell of *Bacillus coli* being able to reduce 15 million molecules in each minute. A systematic study of electrode potentials in bacterial cultures has already revealed many characteristic mutual effects of organism and media. To take a single example, E. W. TODD in 1930 showed that the virulence of hæmolytic streptococci is maintained by opposing the reducing effects which they set up, and here a careful study of the oxidation-reduction potential of the medium is of great value. Thus as a technical aid in bacteriology the measurement of oxidation-reduction potential is at least comparable with that of hydrogen-ion concentrations. It is likely, however, that it will become much more than a valuable technique, and will make possible a more systematic and accurate description of biological oxidations and reductions.

ANNOTATIONS

INSULIN IN PERSPECTIVE

EVIDENTLY one of the ways in which the British Postgraduate Medical School intends to fulfil its purpose is to hold up any eminent man who may be visiting London for pleasure or profit and demand his coöperation. Some member of the staff with special claims on his attention is detailed to entice him into the far west and there to infect him with enthusiasm in doses lethal to his natural distaste, when on his travels, for anything like a job of work. The first fruits of these tactics was an open lecture at the school last week on the history of insulin by Sir Frederick Banting, F.R.S. The audience which filled the clinical theatre included medical visitors, as well as members of the staff, regular students, and practitioners assembled for the current "refresher" course; and their cordial reception of the first of the distinguished lecturers from distant lands to speak at the school was sufficient evidence of their gratitude, to which Prof. F. R. Fraser gave apt expression. Some of them were old enough to have sat helpless at the bedside of cases of diabetic coma, and only those, as Prof. Fraser said, could fully appreciate the wonder of the change brought about by the discovery of insulin.

It is now 14 years since the crucial experiments were made and more than 7 since Banting resolutely turned his attention from the pathology and treatment of diabetes mellitus to other problems. He can thus chronicle with detachment and in perspective the successive stages of the work between Oct. 30th, 1920, when an idea came to him, and Jan. 11th, 1922, when the first patients were treated with insulin. After four years' post-graduate work in surgery at various military and civilian hospitals Banting settled in general practice in London, Ontario, in July, 1920. He kept conventional office hours for 28 days before his first patient presented himself, and the next two months brought few others; but at the beginning of the academic year a part-time demonstratorship at the University of Western Ontario fell vacant and Banting was appointed. He decided to read for the F.R.C.S. of England or Edinburgh so as further to occupy his time while waiting for patients. One evening, after preparing a lecture on the relation of the pancreas to diabetes, he read an article in a medical journal on the degenerative changes in the pancreas which follow blockage of its duct by gall-stones or by experimental ligature; it occurred to him that these changes might make it possible to obtain an islet tissue extract undamaged by trypsin from the acini. He could not sleep that night; at 2 A.M. he got up and wrote in his notebook "Ligate pancreatic ducts of dogs. Wait six to eight weeks for degeneration. Remove the residue and extract." The tale of what followed has become history; those who want to read it in Banting's own words can do so in the *Edinburgh Medical Journal* of January, 1929. Last week he recalled only the salient points of the story: his visit to Prof. J. J. R. Macleod in Toronto to beg for 10 dogs, an assistant for 8 weeks, and facilities for doing blood and urine sugar estimations; the beginning of this work, some months later, with Dr. C. H. Best, then still an arts student, as assistant; their failure to obtain degeneration of the acinar tissue in the first batch of dogs and the repetition of the experiment with looser ligatures; and, only 3 months after the work had been started, success by means of extract of selectively degenerated pancreas in lowering the blood sugar and in improving the clinical conditions of a depancreatised dog. The attempts to obtain extracts of the islet cells free from the products of the acinar cells of the pancreas by more practical methods than duct ligation were detailed, and the steps which led up to the discovery that the active principle could be extracted from the adult whole gland with alcohol. Sufficient purified extract was obtained during the summer months of 1922 to prove conclusively the value of insulin to diabetic patients and the problem resolved itself into the best way to obtain the largest possible quantity of insulin in the best possible form at the cheapest possible price. At this stage the help of the Eli Lilly Company was enlisted for large scale production, and it was due to the splendid coöperation of this firm with the laboratory workers that the task of making the drug generally available was accomplished with such dispatch.

Commenting on associated problems, Banting said that the necessity for administering insulin by injection was not accepted without a struggle. Many other methods were tried; for example, in the attempt to avoid the destructive action of the digestive ferments insulin was given in capsules which would keep it coated until it reached the small intestine. But all such methods had to be abandoned as useless. There remain, he added in conclusion, a vast number of unanswered questions not only in the therapeutics but also in the pathology of diabetes. The most striking of these is the fact that enough insulin can be extracted from the pancreas of a patient dying in diabetic coma to have kept him alive if it had been administered through a syringe. Banting was thus at pains to disclaim on behalf of those working at diabetes the production of a complete story of triumph over disease. It belongs rather to that popular group of thrillers which records a series of exciting episodes culminating in a highly effective onslaught on an evil gang. That the strength and subtlety of the enemy's machinations are not, until the issue of the succeeding volumes, completely understood or entirely baffled only intensifies our admiration for the exploits of the leader of the first successful attack.

ŒSTRIN AND THE BREAST

In a Hunterian lecture delivered before the Royal College of Surgeons of England last February, Mr. Harold Burrows was able to show that œstrin has a remarkable effect in stimulating the development of epithelial structures in the breasts of mice. In the male mice used in his experiments the breast is normally represented by a few scattered ducts. The effects of daily applications of œstrin to the skin of these animals was to cause a budding-out of the epithelium, with an increase in the number of ducts and the formation of alveoli. Cystic dilatation of the ducts also took place, and sometimes a round-cell infiltration of the stroma; and finally, in the later stages, the epithelial lining of the ducts had proliferated so much that it definitely suggested the beginning of an intraduct carcinoma. It will be recalled that Lacassagne,[1] by injecting œstrin into the bodies of male mice, has produced a high incidence of mammary carcinoma, and has found that the actual proportion of the animals growing tumours varies with the strain to which they belong. Certain strains of mice are cancer-prone—i.e., as high a proportion as 72 per cent. of the *females* develop spontaneous cancer of the breast—while in others the incidence may be as low as 2 per cent. But in both strains the males developed tumours in response to œstrin; even in the strain with the low spontaneous incidence of 2 per cent., half of them developed cancer. A short account of the relevant histological changes appears in the April issue of the *British Journal of Surgery*, published there by Prof. Lacassagne's permission, as part of a communication by Sir Lenthal Cheatle. Forty-eight days after commencement of the injections the sections show dilatation of the ducts, which contain desquamated epithelium and a slight increase of breast tissue. By the 85th day the increase in breast tissue is obvious, and there are multiple cysts to be seen, while epithelial neoplastic cells with mitoses have appeared round the margins of the ducts. The sections at 143 days show the same picture in an exaggerated degree; the increase in breast tissue is now enormous, cysts are multiple, and the neoplastic cells are still within the boundary of the duct. At 179 days the section shows a well-developed carcinoma, and also intraduct growth at a distance from the typical carcinoma. Cheatle makes the important observation that carcinoma does not develop in the normal immature breast, but only in abnormal, new breast tissue appearing as a response to œstrin injection.

Even more extraordinary perhaps is Lacassagne's report[2] that he has been able to produce œstrus by injection of fluid expressed from small cysts in the non-cancerous part of a breast removed for carcinoma from a woman aged 57 years. An injection of 1·0 c.cm. of this fluid produced œstrus, while injection of an extract of the carcinomatous tissue in the same breast was ineffective.

ENZOÖTIC BOVINE HÆMATURIA

A DISEASE which is distributed widely throughout the world among cattle resembles what is known as "essential hæmaturia" when it affects man in that it is characterised by little or no systemic disturbance, and the passing of blood in the urine is the only obvious symptom. Consequently cases generally escape attention until the urine becomes markedly discoloured, by which time lesions within the bladder are fairly advanced. Actual diagnosis presents no great difficulty. Erythrocytes in the urine are usually intact and, unless there has been prolonged obstruction of the urinary tract, they are normal in size and shape. As the disease progresses, changes associated with anæmia appear; these become progressively worse and the bovine becomes extremely debilitated. Passage of blood in the urine need not be a continuous process. Frequently periods of apparent recovery are noted, but such periods are seldom of long duration; no case of spontaneous recovery has been recorded.

Numerous theories have been advanced to explain the cause of the disease. These include incorrect diet, malignant neoplasm formation in the bladder wall, plant poisoning, bacterial or helminthic agents. None of these explanations has been supported by convincing evidence. It has never been satisfactorily shown that the condition is infective or contagious; and the world-wide incidence of the condition makes it unlikely that plant poisoning is the cause. Of recent years opinion has veered towards the probability that the condition is due to some mineral deficiency. C. S. A. Datta[3] described a protozoa which he has located in the urine of affected animals and has identified in the bladder wall. The lesions in the bladder consist, in early cases, of small patches of congestion of the mucosa showing punctate hæmorrhagic foci and an associated thickening of the mucosa. Subsequently ulceration appears. In cases of long duration large proliferative growths of the epithelium are to be seen and cyst formation occurs. Microscopically the most striking condition is that of a congestion of the blood-vessels supplying the mucosa and submucosa. The vascular endothelium is deranged and serum exudes into the perivascular tissue. The resulting œdema is followed by localised necrosis and ulceration of the mucosa. Datta considers that the protozoa attacks the endothelial lining of blood-vessels, thus producing the primary lesion. When ulceration takes place these organisms are released into the lumen of the bladder after which an unsuccessful attempt at healing occurs. He also considers that the course run by enzoötic hæmaturia and the histological changes which occur show striking similarities to those of other amœboid infections. The parasite which he describes is to be found in both free and encysted forms. The cytoplasm is amœboid in form and contains a nucleus, karyosome, vacuoles, inclusion bodies, and ingested erythrocytes and particulate matter. Nuclear division has been demonstrated. Free forms vary in size from 10 to 60 microns, these being the smallest and greatest diameters measured. Cysts are somewhat smaller than free forms. It is thought that the organism falls into the genus entamœba. No report is given of the success of efforts to transmit hæmaturia artificially by means of this organism, but experiments with this object are being made.

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[1] Compt. rend. Soc. de biol., 1934, cxv., 937; see also THE LANCET, 1933, i., 1594, and 1934, i., 1013.

[2] Compt. rend. Soc. de biol., 1934, cxvi., 844.

[3] Indian Jour. of Veterinary Science, 1934, iv., 341.

B C G VACCINATION IN SWEDEN

IN 1927 the Swedish National Association against Tuberculosis initiated and paid for a comprehensive scheme of vaccination with B C G among the newborn infants of a district in the north of Sweden much ravaged by tuberculosis. The technique was that recommended by Calmette. Up to the end of 1933 the infants born in this district during this experiment, which is still proceeding, numbered 29,338, of whom 7765, or 26·5 per cent., were given B C G. In the same period there were 319 deaths among the vaccinated and 2101 among the controls,—death-rates of 4·3 and 10·8 per cent. respectively. The difference was less conspicuous when the deaths during the first five days of life were eliminated, but even then it was as great as 4·1 to 8·8 per cent. When the deaths were classified according to the ages at which they occurred, it was found that the difference between the two death-rates diminished with age; in the first year of life it was as 3·8 to 10·9 per cent., whereas in the second year it was as 1 to 2·1 per cent. In the third year it was as 0·5 to 0·8 per cent. The tuberculosis death-rate in the period under review was 0·1 per cent. for the vaccinated and 0·5 per cent. for the controls. The difference between the tuberculosis death-rates in the two groups was greatest among the oldest children. A classification of the deaths according as they were due to tuberculosis or other causes showed that B C G vaccination added little or nothing to immunity to infectious diseases other than tuberculosis. It has been maintained in some quarters that children given B C G are apt, as a class, to be more robust from the outset. To test the validity of this hypothesis, all the deaths from congenital debility were excluded from the statistics, and yet the difference between the death-rates among the vaccinated and the controls was as 3·8 to 6·8 per cent. Another explanation for the comparatively low death-rate of the B C G group is that the children in it enjoy greater care than the controls. Prof. Carl Naeslund,[1] who supplies the above-mentioned statistics, is not prepared to dismiss this explanation as invalid, but he adds that his colleague, Dr. Törnblom, who has been in close touch with the families concerned, believes that the children in the two groups enjoy the same care. Naeslund is not prepared to draw any conclusions from his material with regard to any immunity to tuberculosis which may be conferred by B C G; the unknown factors in this problem are too numerous to justify any such conclusion. But he feels sure that somehow or other B C G vaccination is of value in the campaign against tuberculosis. And he claims that after more than seven years' experience, nothing has happened to convict B C G of any ill-effects.

AGRANULOCYTOSIS

FROM Denmark Dr. C. Holten contributes further observations[1] to what is known of agranulocytosis. It has been recognised for some time that more women than men suffer from this disease, and Schultz, who described it as an entity in 1922, was inclined at first to think it was confined to middle-aged women. Holten's investigations, however, approach the problem of sex-incidence from a new angle. He finds that among the 3054 patients treated in his hospital in 1932 and 1933, a total of 352 were given amidopyrin (Pyramidon), and as many as 239 of these were women. In other words, the number of women receiving this drug was twice as great as the number of men, and if this ratio exists elsewhere, a simple explanation would be found for much, if not all, of the greater incidence among women. As 5 of the 352 patients developed agranulocytosis, anyone innocent of the pitfalls of statistics might be tempted to calculate that the risk of contracting agranulocytosis after taking amidopyrin is as 1 in 70; but Holten considers this an over-estimate of the danger, and would easily find support in this opinion. He also goes into the question whether agranulocytosis is a new disease, and is inclined to conclude that it is. In this connexion he refers to the retrospective comb-out by Lichtenstein of the records of the Stockholm fever hospital between 1916 and 1925. Among the 34,417 patients treated in this period there were 1449 deaths, but in the first five years not one of these could be considered as due to overlooked agranulocytosis. In the next five-year period there were at most 5 deaths—and probably only 1 or 2—which could be traced to this cause. Between 1926 and 1931, however, as many as 26 cases of agranulocytosis were diagnosed as such in this hospital. The experiences of the Blegdam's Hospital in Denmark point the same way, and the more conclusively as in this hospital blood examinations have long been carried out as a routine when any necrotic condition is found in mouth and throat. Here the absence, until the last few years, of records of what is now recognised as agranulocytosis can hardly be attributed to an oversight.

NARCOTIC ADDICTION IN INDIA

WRITING on drug-addiction in India Lieut.-Colonel Chopra[2] traces the history of the habitual use of narcotics from early times, but deals more particularly with experience since the report of the Royal Commission on the opium question in 1895, gained under the auspices of the Indian Research Fund Association. While the consumption of opium in British India is less than half what it was twenty years ago the administration of the drug to infants is still prevalent, and "is probably a cause of the high infant mortality in some communities." Thus "in Berar it is stated that 75 per cent. of the infants are doped with opium and 25 per cent. of the total opium consumed goes to infants." Addiction to

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[1] Nord. Med. Tidskrift, April 20th, 1935, p. 616.

[1] Nord. Med. Tidskr., 1934, viii., 1659.

[2] Chopra, R.N.: Indian Med. Gaz., March, 1935, p. 121.

Post—the unlanced poppy capsules—apparently produces more pronounced physical, mental, and moral degeneration in the habitué than is the case with opium. It is estimated that in British India out of a population of 27 millions at least one or one and a half millions take opiates habitually; indeed, Chopra holds that most of the raw opium sold in the country is used for addiction purposes. Opium-smoking is more prevalent in Assam than elsewhere, and is discouraged by legislative and administrative restrictions. Resort to morphine is increasing, especially among young persons, while cocaine is smuggled into India in large quantities and its use is spreading in the large towns. The magnitude of the problem of drug-addiction in India may be appreciated by figures indicating that whereas in Europe and America the ratio of addicts to population is 0·1 or 0·2 per cent., in India the rate is 1 to 3 per cent. Colonel Chopra's researches certainly put a rather different complexion on the Indian aspect of the opium problem to that furnished by the report of the Royal Commission of 1895, which Lord Morley remarked had "somehow failed to satisfy public opinion or ease the consciences of those who had taken up the matter."

HUGH OWEN THOMAS

We reviewed at the beginning of the year a short book entitled "Hugh Owen Thomas: A Personal Study," by Frederick Watson, author of "The Life of Sir Robert Jones." The origin of the book was a discussion, shortly before his death, between Sir Robert Jones and Mr. Watson, as to the publication of a centenary volume dealing with the life and principles of the famous surgeon and bonesetter. It was then decided that the work should be done in two separate parts, one dealing with the environment and personality of the man and one dealing with his methods. The second volume now appears[1] from the pen of Mr. McCrae Aitken, and sets out how Thomas came to formulate his special treatments while tracing their influence on the practice of to-day. Mr. McCrae repeats, as is necessary to make the story coherent, many details of Thomas's early life in illustration of the way in which hereditary knowledge—he was the descendant of a famous line of Anglesey bonesetters—and personal industry made his practice so enormous and his position in the medical world so important, and this in spite of the fact that he never seems to have given any personal demonstrations, or any lectures explaining what he was doing and why he was doing it. "Looking back over the history of surgery in England during nearly sixty years," writes Mr. McCrae Aitken, "we can realise the loss of life and limb occurring in this country which might have been prevented if Thomas had come out of his shell and personally demonstrated his conservative methods of treating injuries and diseases of bones and joints and shown what he meant by uninterrupted rest." Robert Jones, as is well known, largely supplied this gap at a later date, and won by peaceful penetration a campaign which had failed under direct attack; not that Thomas led attacks, but he showed that when attacked he was splendidly capable of defence. Mr. McCrae Aitken epitomises Thomas's work, and in so doing shows it to have had a range quite unexpectedly large. His literary contributions and polemic correspondence prove him to have been fully conversant with the clinical medicine of the day, and to be especially strong on the details of the actual treatment of the sick by diet, nursing, and attention to environment. His name will always be associated with his systematic treatment of joint injuries and diseases, and for the splints which he devised to give effect to his methods, but the general message of this little book is that Thomas had a generally keen clinical acumen and a fine knowledge of physiological laws. His passion for accurate knowledge and his recognition of the principles of tissue life and repair made him seek fundamental rules of treatment. His appreciation of the value of rest drove his logical mind to reduce the management of certain groups of disease to a definite system, and to design splints to achieve his purpose with efficiency. Hugh Owen Thomas, M.R.C.S., was a club doctor, beloved by his own people, to whose service he devoted his strength and his life; he was a great surgeon whose tenets have now become a part of surgical routine, and he was a brave and simple man. Such was he whose centenary Sir Robert Jones planned to commemorate. The task has been well carried out by Mr. Frederick Watson and Mr. McCrae Aitken.

TYPHUS

Some interesting conclusions on the ætiology and historical epidemiology of typhus will be found in a book[1] by Dr. Zinsser which, as may be inferred from its title, is really intended for the layman. He considers that the two varieties of typhus—the "murine" and the "human"—are fixed, though very closely related, variants and that the "human" type is a relatively recent offshoot from the "murine," in which the rat-flea cycle precedes human infection. Both types coexist in Europe and America and also probably in many other parts of the world. The "murine" virus is maintained in inter-epidemic periods in rats and possibly in mice and occasionally causes cases in man from the bite of the rat-flea, but epidemics are only caused when the circumstances are such that human lice can transmit it from man to man. Individuals infected by the "human" type may have another attack many years later and epidemics may start under conditions of general louse infestation.

Historically, Dr. Zinsser considers, on rather slender evidence, that the first recorded severe epidemic in Europe was transported by soldiers from Cyprus to Spain in 1490; that typhus played a decisive rôle in the relief of the Imperial Army besieged in Naples by the French in 1528; reached its apogee in the Thirty Years War, and declined until the appalling recrudescence among the Serbs and in Russia during the great war. Dr. Zinsser concludes: "Typhus is not dead. It will live on for centuries, and it will continue to break into the open whenever human stupidity and brutality give it a chance, as most likely they occasionally will. But its freedom of action is being restricted, and more and more it will be confined, like other savage creatures, in the zoological gardens of controlled diseases." His book is described as a biography of typhus. It would be more accurate to say that typhus is used as a vehicle by which the author displays his literary and other prejudices. The medical reader will find the book well worth reading. It is both stimulating and unusual, and behind an at times almost unbearable discursiveness is concealed real erudition and knowledge of medical history. One is reminded of those Polish and Russian meals which begin with so many exciting hors d'œuvres and glasses of vodka that the actual dinner escapes attention. But it should not be neglected for it contains sustaining fare.

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[1] Hugh Owen Thomas: His Principles and Practice. By D. McCrae Aitken, M.A., M.B., Ch.B. Edin., F.R.C.S. Edin. and Eng., Director of Surgery, Robert Jones and Agnes Hunt Orthopædic Hospital. London: Oxford University Press, Humphrey Milford. 1935. Pp. 96. 12s. 6d.

[1] Rats, Lice and History. By Hans Zinsser. London: George Routledge and Sons, Ltd. 1935. Pp. 301. 10s. 6d.

PHYSICAL ENERGY

We recorded last week the formation of a Central Council of Recreative Physical Training representative of various bodies interested in the welfare of young people. It is intended to survey the existing facilities for men and women as well as for adolescents and to prepare definite proposals for their coördination and development. Sporadic efforts are being made throughout the country to supply boys and girls who have left school and adults of all ages with some form of congenial physical recreation—gymnastics, swimming, sports, and so forth. But these efforts by no means cover all districts, or provide for the needs of all groups of inhabitants. For instance, there are youths and girls in the country who do not feel moved to join scout or guide movements, and others, in towns, who have no impulse to belong to clubs or attend evening institutes, and are thus not eligible for the facilities for physical recreation provided in association with them. Even where opportunities for exercise are provided, the lack of expert assistance often prevents their full use. At the present time the standard of training and equipment of such teachers and leaders as are available varies within wide limits. Intensive courses of training will doubtless be instituted as one of the first activities of the new council. If these are wisely planned and not too ambitious in scope they should attract a large number of potential leaders, on whose help the success of evening centres as well as of playing fields largely depends. It has been something of a disappointment to those who have striven hard to provide open spaces for games to find that not only space but a stimulating organiser is needed; in the absence of anyone to make suggestions for different kinds of play and to help to carry them out not only children but adults tend to get bored and to go away. A discerning and experienced observer will, moreover, be able to help those who may have no interest in games but enjoy keenly athletic sports such as running, jumping, or throwing which demand endurance, nice judgment, or swift decisions. It is to be hoped that those of middle age as well as the young will be catered for when new plans are being made, especially middle-aged women. Except in well-to-do circles, where women well over 50 habitually ride and swim and play golf or even tennis, there is still a tendency to find something comic in the idea of their taking physical exercise; but where, as in certain village institutes, the older women are encouraged to play games or join in country dances the improvement in mental as well as physical alertness and well-being is quite remarkable.

Already, we understand, the response to the idea of a central organisation which will encourage the development of all existing activities in such a way as to avoid overlapping has been most enthusiastic, especially from workers in recreational gymnastics. There can be no doubt that the formation of a national coördinating scheme will act as a stimulus to local effort, provided that no misguided attempts are made to reduce it to a standard pattern. The temporary office of the new council at 11, Doughty-street, London, W.C., is already proving too small to deal with its rapidly growing business, and it is to be hoped that when the Jubilee Trust fund is distributed the council will be able to enlist its support so that suitable headquarters and an adequate office staff will be secured. We believe that the new organisation will be a powerful agent in promoting national health and happiness.

CALCIUM THERAPY IN EPILEPSY AND MIGRAINE

There is little agreement about the rôle of calcium in epilepsy. Griffiths[1] has shown that sodium sesquiphosphate, which lessens the blood calcium, will cause an increase of fits, and this suggests that attempts should be made clinically to raise the level. This is not so easy to achieve, but Untersteiner[2] of Salzburg nevertheless claims excellent results from prolonged administration of large doses by mouth. He uses the double lactate of calcium and sodium, believing that the sodium lactate promotes the absorption of calcium and prevents the anorexia, constipation, and abdominal pain that would otherwise result. His plan is to give fifteen grammes of the double salt daily. For 6–8 weeks the previous dose of Luminal or bromide is given as well, but it is then gradually decreased and finally withdrawn altogether. Out of 49 epileptics treated for a period of a year or more, 22 were freed from their fits by this method, 17 were greatly improved, while in only 10 the treatment failed. As one would expect, the patients who had frequent slight seizures showed the least response.

Untersteiner treats migraine with similar doses of the double lactate, to which he adds small amounts of amidopyrin, luminal, and caffeine citrate. Here again after the first 6–8 weeks, first the luminal, and later the amidopyrin and caffeine are gradually lessened and withdrawn. Out of 27 cases he claims complete freedom from attacks in 7, much diminution in their number and severity in 11, and some improvement in 4; there were 5 failures. The value of this work would have been greatly enhanced by blood calcium estimations.

Prof. Otfried Foerster, of Breslau, will deliver the Hughlings Jackson lecture at 8.30 P.M. on Wednesday, July 31st, at B.M.A. House, Tavistock-square, London, W.C.

Mr. Walter Elliot, M.B., Minister of Agriculture, has been elected a Fellow of the Royal Society under the special statute which admits "persons who have rendered conspicuous service to the cause of science or are such that their election would be of signal benefit to the Society."

Prof. A. J. Ballantyne of Glasgow is giving a course of six lectures at Basle, Switzerland, on the histological interpretation of the appearances of the fundus oculi.

A Conference at Royat.—It has been decided to hold an international meeting at Royat, France, every third or fourth year, for the discussion of cardiovascular disorders. The subject of the first, to be held next Whitsuntide, will be Vascular Spasm, and the lecturers will include Prof. C. Heymans (Ghent) and Dr. L. Brouha (Liége), Prof. Riser (Toulouse), Prof. R. Leriche and Dr. Fontaine (Strasbourg), Prof. Marañon (Madrid), and Prof. Loeper (Paris).

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[1] Griffiths, G.: Jour. Neurol. and Psychopath., 1931, xv., 29.
[2] Untersteiner, R.: Med. Klinik, May 31st, 1935, p. 717.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LVIII.—PROGNOSIS OF PUERPERAL INSANITY

THE conception of "puerperal insanity" as a mental disease peculiar to the childbearing woman enjoys a protracted funeral. No such disease exists; pregnancy, labour, and the puerperium are properly regarded as precipitating or associated causes of breakdown in certain women unable to withstand normal physiological stress. Yet the title is here allowed to stand without change, as it expresses clearly the purpose of this brief article, which attempts to follow the fortunes of those women who suffer from mental symptoms during labour and the puerperium.

Some space must be devoted to clearing the ground and defining the scope of the inquiry. Many patients suffer from mild confusion, depression, or other mental symptom after childbirth, who never have to leave their homes, and who are looked after with varying skill and success by their doctor or nurse. Others are sent to nursing home or observation ward, and return home after a brief stay of a few days or weeks. Others, again, will require treatment in a mental hospital. It is evident that there can be no reliable figures of the whole number of women who develop mental symptoms in the childbearing period, figures that are recorded being mainly concerned with those cases requiring mental hospital care. Such figures vary considerably according to different observers. The variation depends on nomenclature, the type of hospital receiving the patient, and even differences of diagnosis. Notwithstanding these difficulties, there is a considerable agreement which enables broad conclusions to be drawn from available figures. For convenience of description patients suffering from "puerperal insanity" are here divided into two main groups:—

Group I.—This is the larger group and roughly comprises two-thirds of the total cases. In this group the symptoms are due to the occurrence of well-known mental diseases, such as the manic-depressive psychosis, and the wide class of schizophrenic disorders in which dementia præcox, paraphrenia, and a rare paranoia would be included.

Group II.—The remaining third of the total cases consists of two parts, a larger and a smaller. The smaller, not strictly within the scope of this review, is made up of the neuroses and psychoneuroses; hysteria, neurasthenia, obsessional, and anxiety states occurring in connexion with childbirth. The larger part of the group is composed of those patients who exhibit mental symptoms in association with some bodily disorder, the most frequent being puerperal sepsis.

With these two main divisions in mind a more detailed examination of the cases falling into each will be made, together with the factors on which prognosis rests.

Symptoms due to Well-known Mental Diseases

The prognosis in Group I. will depend largely on the diagnosis at which the physician arrives. A striking feature of the mental symptoms of puerperal cases is the predominance of depression.

Very many of the depressive cases will be found to be due to the depressive phase of the *manic-depressive psychosis*. For the most part, the prognosis is good for the individual attack, and a guide to the duration of the illness may be obtained from the history of previous attacks which are likely to have occurred. The ever-present danger of suicide in depression must be remembered, and survival, when marked suicidal propensities are present, can only be ensured by adequate nursing, probably under mental hospital conditions. Prognosis will also depend partly on the number and severity of previous attacks, remembering that successive attacks tend to become longer and the normal intervals shorter. Chronicity is more likely also in those cases with a bad family history. While most of such women make a good recovery for the individual attack, their future is not so satisfactory. Recurrence is probable under a similar stress. It should be the duty of the practitioner to minimise the chances of recurrence. It is wise to insist on two years elapsing before pregnancy is risked again, and then only if the patient has remained mentally and physically well. Another factor affecting the ultimate prognosis of such cases is the well-being or otherwise of the marital and domestic life. Patient and husband must be adequately instructed in suitable contraceptive measures. This type of patient is especially suitable for the measure of voluntary sterilisation, recently proposed in what is known as the Brock report on sterilisation. While a further pregnancy is likely to precipitate another attack, it must not be forgotten that symptoms may well be provoked by uncertainty, anxiety, and worry about a possible pregnancy. As a rough guide the manic-depressive cases may be estimated at from 40 to 50 per cent. of the whole, of which all but 3 to 4 per cent. make good recoveries.

In *schizophrenics*, in contrast to the depressives, the outlook for recovery is poor. Young patients exhibiting catatonic features are, perhaps, the most likely to do well, the rapidly deteriorating personalities being the most hopeless. Figures are not easy to arrive at, but from 15 to 18 per cent. of the total cases may be taken as a fair estimate. Unfortunately, it may be put another way—namely, that of every 100 women who suffer from "puerperal insanity," fifteen or more are likely to become chronic inmates of mental hospitals. Serious schizoid mental symptoms in the puerperal period have therefore an unfavourable prognosis, and there is little more to be said. A strong hereditary strain may be found in the family of the patient, and a careful history of the individual usually reveals to a skilled inquirer undesirable traits of character commencing in childhood.

Psychoneuroses and Neuroses.—The Confusional Psychosis.

As has been said, in Group II. are included a larger number of patients suffering from mental symptoms associated with bodily disorders, and a smaller number of the neuroses and psychoneuroses. Together these conditions account for roughly one-third of the total of puerperal mental states.

The pyschoneuroses and neuroses may be dealt with very briefly. Their symptoms are both mental and physical, and occur later in the puerperium than those of "puerperal insanity." In fact they are most prone to occur when the patient commences to get up and about. These illnesses have a good prognosis if recognised early and carefully treated. Indeed, the prognosis is excellent if the practitioner is able to insist on a return to bed and a prolonged rest. Later the question of psychotherapy may be considered; but rest is the first essential. It must, however, be admitted that hysterical and anxiety symptoms are very liable to recur, and a good prognosis may first require a successful treatment, not of the woman herself, but of her husband and the conditions of her everyday life.

The confusional psychosis, by far the commonest case in this one-third of the total, is that associated with bodily disease. Such disease may be severe hæmorrhage, eclampsia, puerperal sepsis, or even a passing infection acquired during the puerperium—for example, influenza. The mental condition common to them all is what is known as the confusional psychosis, with confusion as its cardinal sign. The confusional state may vary from a delirium accompanying severe and often fatal sepsis, to a restless, confused mental illness persisting for months after the disappearance of the physical condition by which it was initiated. Infection occupies the chief place in the ætiology of this group, and there are authorities who insist that infection, shown by a slight and often overlooked pyrexia, plays a much greater part in "puerperal insanity" than is generally recognised. The prognosis in general is good, provided the patient survives the bodily condition behind the symptoms.

Confusional states associated with eclampsia seem invariably favourable and clear up in two to three months. After severe hæmorrhage and conditions producing profound debility, the confusion is slower to clear and may last for six months or more. With puerperal sepsis the prognosis depends in an especial manner on the physical state. The presence or absence of a blood infection, of peritoneal involvement, of one of the many possible accidents of septicæmia are all matters of grave importance. Mental confusion, associated with serious puerperal sepsis, means a fatal termination to about half the cases. Given survival, the prognosis is good, an average duration being about six months, but the persistence of the symptoms for a year should cause little anxiety as to the ultimate result, very few cases becoming chronic. The confusional patient ought not to break down in a future pregnancy, provided that the health of the mother is completely restored. An interval of two years is a safe rule, as in Group I.

Summary

When this brief discussion of the prognosis in "puerperal insanity" is summarised, the condition is readily appreciated as a serious complication of the puerperium. A vivid presentation of the prognosis may be obtained by following the fates of an average set of 100 mothers who exhibit mental symptoms during the puerperium. In this article the cases have been divided into two descriptive groups. The larger, two-thirds of the whole, consists of patients who develop one of the familiar types of mental disease, such as the manic-depressive psychosis or schizophrenia, pregnancy and parturition acting as a precipitating stress. The second, smaller group, one-third of the whole, is made up of a few neuroses and psychoneuroses, and a larger number of patients showing confusional mental symptoms associated with bodily disorders, of which puerperal sepsis is the most common. About 8 per cent. of the women die, and about 20 per cent. remain chronic mental invalids, whether in or out of mental hospitals. Of the 70 per cent. or thereabouts who recover, many live under the shadow of recurrence, after suffering an illness of some months' duration.

The figures which have been used in this article have been assembled from personal cases and from the works of W. S. Dawson, (1930), A. W. Bourne (1924), E. W. Anderson (1933), Toulouse et Courtois (1932), and G. Clarke (1913), to whom I would express my indebtedness.

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SPECIAL ARTICLES

SOME RESULTS OF THE APPLICATION OF A SIMPLE TEST FOR EFFICIENCY OF PASTEURISATION

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F. K. NEAVE, B.S.A.

As is well known, the meaning of the word "pasteurised" as applied to milk in this country is quite clearly and legally defined and no milk which has not been subjected to the legally defined process may be sold as "pasteurised milk." It is also well known that if the British official stipulations regarding pasteurisation are properly carried out, any pathogenic organisms which are likely to be present in ordinary raw milk are destroyed, and that with a margin of safety. These regulations require that milk, to be pasteurised, shall be "retained at a temperature of not less than 145° and not more than 150° Fahrenheit for at least half an hour, and be immediately cooled to a temperature of not more than 55° Fahr[illegible]" Further, it is required that "the type o[illegible] used for pasteurising and the methods em[illegible] be such as are satisfactory to the licensing [illegible]

Hitherto no satisfactory method has been available for controlling the efficiency of the process by examination of the product, and as a consequence, pasteurisation plants have tended to be assessed more by their appearance and by the claims made for them than by their proven functional excellence. Although, indeed, the experienced licensing authority can satisfy himself by inspection whether some at least of the many possible sources of trouble have been avoided, to judge from inspection alone whether a given machine will produce efficiently pasteurised milk, day in and day out, is obviously impossible. In practice such inspection, if combined with careful bacteriological testing and accurate temperature recording, is usually sufficient to decide whether or not a given plant is functioning satisfactorily. But this is too complicated a procedure for the overworked local authority to conduct frequently; some quicker test, preferably on the pasteurised milk itself without inspection of the plant, would have obvious advantages if it were reasonably simple and certain.

Such a test has, it is believed, been discovered, and it is described in some detail elsewhere.[1] It depends on the finding [2] that phosphatase, an enzyme whose pr[illegible] and quantity can be detected and determi[illegible] and which is present in all raw milk, h[illegible] ly convenient property of being almost [illegible] estroyed by "legal" pasteurisation, but [illegible] completely destroyed if the milk is heated [illegible] han 145° F. or for

TABLE SHOWING RESULTS OF PHOSPHATASE TEST ON DESIGNATED PASTEURISED MILK

(*a*) SOLD TO PUBLIC AS PASTEURISED (*London Boroughs*)

Ref. No.	Month in 1935.	Size of firm.	Numerical results of test (blue units).	Finding.
216	Feb.	Small A.	2·2	Pasteurised.
217	,,	B.	1·4	,,
218	March.	,,	1·5	,,
219	Feb.	C.	10 ÷	Raw or grossly underheated.
220	March.	,,	1·5	Pasteurised.
221	Feb.	D.	7·6	Grossly underheated.
222	March.	,,	1·2	Pasteurised.
223	Feb.	E.	1·9	,,
224	March.	,,	1·6	,,
228	April.	F.	1·9	,,
204	March.	Intm. G.	2·5	Pasteurised.*
209	,,	H.	3·6	Incorrectly pasteurised.
210	,,	,,	9·4	Grossly underheated.
211	,,	,,	10 ÷	Raw or grossly underheated.
212	May.	,,	10 ÷	,,
213	,,	,,	10 ÷	,,
214	,,	,,	10 ÷	Raw or grossly underheated.
229	March.	I.	10 ÷	,,
230	Feb.	,,	3·5	Incorrectly pasteurised.
231	,,	Large L.	1·3	Pasteurised.
232	March.	,,	1·2	,,
233	Feb.	M.	1·4	,,
234	,,	,,	1·4	,,
235	March.	,,	1·6	,,
236	,,	,,	1·5	,,

(*b*) SOLD TO PUBLIC AS PASTEURISED.—(*Towns* (population above 20,000) *or Cities other than London*)

Ref. No.	Month in 1935.	Size of firm.	Numerical results of test (blue units).	Finding.
308	Early March.	Small S.	1·4	Pasteurised.
309	,,	,,	1·2	,,
310	Late March.	,,	1·9	,,
314	Feb.	T.	1·5	,,
321	March.	,,	1·6	,,
326	April	,,	1·5	,,
331	Jan.	U.	10 ÷	Raw or grossly underheated.
330	March.	Intm. V.	10 ÷	,,
336	Jan.	W.	4·1	Incorrectly pasteurised.
375	Feb.	X.	1·3	Pasteurised.
334	March.	X.†	1·9	,,
335	,,	X.†	3·6	Some apparatus and time as in 334, but small error in one of vats.
339	April.	X.	1·9	Pasteurised.
351	Feb.	Large Y.	2·3	,,
353	March.	,,	1·2	,,
355	April.	,,	1·7	,,
357	Early April.	Z.	5·4	Incorrectly pasteurised.
354	Late April.	,,	10 —	Raw or grossly underheated.

(*c*) SOLD TO SCHOOL-CHILDREN AS PASTEURISED (*London Boroughs*)

Ref. No.	Month in 1935.	Size of firm.	Numerical results of test (blue units).	Finding.
205	Early March.	Intm. J.	1·6	Pasteurised.
206	Late March.	,,	2·1	,,
207	,,	,,	2·2	,,
237	April.	Large M.	Below 2·3	,,
238	,,	N.	2·9	Incorrectly pasteurised.
239	,,	,,	4·9	,,
240	,,	,,	Below 2·3	Pasteurised.
241	,,	O.	9·6	Grossly underheated
242	,,	,,	8·9	,,
243	,,	,,	10 ÷	Raw or grossly underheated.
244	,,	P.	10 ÷	,,
245	,,	,,	Below 2·3	Pasteurised.
246	,,	,,	,,	,,
247	,,	Q.	,,	,,
248	,,	R.	10 ÷	Raw or grossly underheated.

(*d*) SOLD TO SCHOOL-CHILDREN AS PASTEURISED (*Towns or Cities other than London*)

Ref. No.	Month in 1935.	Size of firm.	Numerical results of test (blue units).	Finding.
350	April.	Small AA.	7·2	Grossly underheated.
367	Jan.	BB.	2·2	Pasteurised.
369	March.	,,	1·3	,,
368	Feb.	CC.	3·7	Incorrectly pasteurised.
408	March.	DD.	10 ÷	Raw or grossly underheated.
409	,,	Intm. EE.	1·4	Pasteurised.
338	Feb.	,,	3·5	Incorrectly pasteurised.
339	March.	,,	1·5	Pasteurised.
343	Early Feb.	Large GG.	4·8	Incorrectly pasteurised.
344	Late Feb.	,,	10 ÷	Raw or grossly underheated.
345	March.	,,	10 ÷	,,
346	,,	,,	1·8	Pasteurised.
349	Jan.	,,	10 ÷	Raw or grossly underheated.

(*e*) SOLD TO SCHOOL-CHILDREN AS PASTEURISED (*Rural Districts*)

Ref. No.	Month in 1935.	Size of firm.	Numerical results of test (blue units).	Finding.
401	Jan.	Small HH.	Less than 2·3	Pasteurised.
406	,,	II.	1·5	,,
407	March.	,,	10 ÷	Raw or grossly underheated.
410	,,	JJ.	10 ÷	,,
412	April.	,,	6·0	Incorrectly pasteurised.
402	Feb.	KK.	1·9	Pasteurised.
403	,,	LL.	2·0	,,
404	March.	Intm. MM.	1·6	,,
391	Jan.	Large N.	3·0	Incorrectly pasteurised.
397	Feb.	,,	6·0	,,
405	March.	NN.	10 ÷	Raw or grossly underheated.

Intm. = intermediate. * Slight error in technique. † From vat.

a shorter period than thirty minutes. Thus milk heated at 143·5° for half an hour, or milk heated at 145° for only twenty minutes, or milk containing as little as 0·25 per cent. of raw milk in the properly pasteurised bulk, still contains detectable quantities of the enzyme.

Over all ranges of temperature and time *Mycobacterium tuberculosis* is destroyed rather more quickly than the phosphatase, so that a heated milk which does not contain the enzyme has presumably been sufficiently heated to destroy any *M. tuberculosis* originally present and hence [3] all the common pathogenic organisms. It is naturally not possible by the phosphatase test to decide whether or not there has been infection of the milk *after* pasteurisation, nor is it absolutely certain that in a milk which gives a negative phosphatase test every pathogenic organism has been destroyed—i.e., it is possible to imagine a small leak of raw, infected milk into the pasteurised bulk, after heating, in insufficient quantities to give a positive phosphatase test but in sufficient amounts to convey infection.

Observations on "Pasteurised" Milks

The purpose of this communication is not to discuss the test in detail, but to give some recent representative results, which have been obtained by applying the test to milk, sold to the public or sold to school-children under the "milk in schools" scheme, *as designated "pasteurised,"* in two London boroughs, five provincial towns, and in certain rural districts. The samples have been bought over the counter, or taken from consignments being sent for sale in schools by arrangement with the local authority, or collected by the official representatives of local authorities, without any selection of better or poorer distributors.

The figures shown in the accompanying Table as "blue units" have a quantitative significance, which may be interpreted as follows: below 2·3 units the milk has been heated at such a temperature and for such a length of time as to destroy pathogenic organisms; between 2·3 and 6 units there has been some error in the pasteurisation technique; above 6 units there has been some gross error in the pasteurisation technique; above 10 units not only is the error in technique gross, but the milk may, in fact, never have been heated at all.

In the case of milks which the test shows to be in the category "incorrectly pasteurised," though there is no doubt that correct "legal" pasteurisation has not been carried out, the error is not very great and it is likely that a slight tightening-up of the technique, or small alterations or readjustment in the apparatus will enable a more satisfactory product to be turned out. On the other hand, in cases where the milk is found to be "grossly underheated," there is either serious inefficiency of the plant, carelessness in management, or fraud.

Comment

On the whole, the data speak for themselves and comment at this stage will be limited to a few lines. From the figures published above, and from a large number of others in our possession, it seems to us that our recent application of the phosphatase test permits the following statements:—

(1) A large number of pasteurising plants of all sizes both in London and elsewhere are either inherently functionally inefficient or unsatisfactorily operated.

(2) The properly designed and supervised plants, whether large or small, provide a satisfactory product. The phosphatase test has proved a valuable aid in this supervision.

(3) Of the large firms a majority, but by no means all, use efficient plants and/or methods.

(4) The milk sold to school-children as "pasteurised" appears, in a large proportion of the cases examined, to have been pasteurised in a particularly amateurish way.

(5) In view of the large percentage of designated "pasteurised" milks on the market which have been grossly underheated it is particularly desirable that all milk, and especially milk which is to be consumed by school-children, should reach a reasonable hygienic standard — say, Grade A — before pasteurisation.

We are indebted to Dr. H. J. Milligan (Reading), Dr. William Stott (Southwark), Dr. W. R. Graham, Mr. T. H. Jenks (Aylesbury), Mr. J. McClemont, and Mr. W. A. Hoy for their help during the course of this work.

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MEDICINE AND THE LAW

Fees of Doctors called in by Midwives

IN Brown and others *v.* Monmouthshire County Council (see THE LANCET, March 23rd, 1935, p. 694) the Court of Appeal held ultra vires paragraph 8 of a scale of fees fixed by the Ministry of Health in 1922 under Section 14 of the Midwives Act of 1918 where a midwife calls in a registered medical practitioner in emergency. The county council could have appealed against this decision and the Ministry, whose order was successfully impugned, might have been interested in the fighting of his battle. The Minister has, however, intimated to local supervising authorities that there will be no appeal, and that his prescribed scale of fees is to be read as if the offending paragraph 8 were deleted. Doctors' fees for services when called in by midwives in emergency are therefore now governed by the first seven paragraphs of the scale, although the Minister states that he is considering the question of amending Section 14. In the Court of Appeal the Master of the Rolls observed that the keynote of the Midwives Acts of 1902 and 1918 was that it is to the interest of the State that a mother and her child shall be so treated in the matter of child-bearing that the mother shall not be injured but shall be restored to health, and that the child shall not suffer disability. The power of the midwife to call in a registered practitioner in emergency, he added, carries out this important principle of the Acts. Section 14 said that in such cases the local authority should pay the practitioner "a sufficient fee, with due allowance for mileage" according to the scale fixed by the department. The scale fixed in 1922 set forth seven items. The first was a fee for all attendances of a doctor at parturition, the second a fee for a second doctor attending to give an anæsthetic, the third a fee for suturing the perineum, and so on up to the seventh, which was a fee for attendance on mother and child at the doctor's residence or surgery. Then came paragraph 8, which said that in particular circumstances specified—e.g., where the doctor attends under club arrangements—no fee at all should be payable. In the cases which came before the Court of Appeal last March it was agreed on all sides that the doctors had been properly called in by midwives in emergency; they were therefore entitled under the Act to their "sufficient fee with due allowance for mileage." When the county council took refuge under paragraph 8, the Court of Appeal in effect declared that a power to fix fees (under Section 14) was not a power to deprive doctors of fees, or as Lord Justice Romer put it, a power to fix a general scale universally applicable to all practitioners was not a power to discriminate between one practitioner and another. If the Minister is to be able to prescribe the conditions for withholding fees under Section 14, or for discriminating between doctors in different cases, he must show the statutory authority under which he purports to act. He could produce no such authority to the Court of Appeal, but the intimation in his circular suggests that he may presently ask Parliament to give him the authority he now lacks. His proposals should be carefully scrutinised.

The matter can stand on the broad principle enunciated by the Master of the Rolls. The country wants the best possible treatment for mother and child in emergency cases of childbirth. Parliament has said that the doctors shall have a sufficient fee—a not unreasonable element in any scheme for obtaining the best possible treatment. Local authorities have readily recognised the doctor's statutory right to his fee under Section 14; the Monmouthshire County Council itself is believed to have paid such fees without hesitation until it began to take refuge behind paragraph 8 which the courts have ruled to be invalid. It is not in the interests of a satisfactory midwifery service that doctors should be allowed to feel that a local authority wants to wriggle out of a statutory obligation.

Proposed Changes in Coroners' Law

Last week a coroner complained that the police were duplicating the work of preliminary investigation which his officer had in hand. The incident is a reminder of the indefinite and unrecognised position of the coroner's officer, of whom the Coroners Acts make no mention. The Departmental Committee on Coroners' Law and Practice has had its attention drawn to this point by a recent memorandum submitted on behalf of the British Medical Association. The memorandum advocates statutory recognition of the coroner's officer and specific provision that he shall in all cases be a police officer. Other matters mentioned by the Association's memorandum include a reference to the increasing practice of coroners in seeking to obtain (often through the coroner's officer or a police officer) information from the medical attendant of the deceased as to his medical history. The memorandum rightly deprecates this attempt to obtain medical evidence through a third person. Though the Acts make no special provision for a fee for a doctor's report in such cases, some local authorities use their discretionary power to pay a fee of 10*s.* 6*d.* (or in some cases £1 1*s.*), while others refuse to make any payment. There can be little doubt that the medical attendant's report is of value in the economic administration of justice and in the public interest. It seems entirely reasonable to recommend statutory provision for a fee not less than 10*s.* 6*d.*

The memorandum usefully reminds the committee that the Acts make no provision for travelling expenses where the practitioner attends to give evidence at an inquest. He may often be required to travel a considerable distance, and it would be equitable that the law should be amended to authorise a mileage fee which some county councils already allow. Another suggestion to the committee concerns the presence at post-mortem examinations of the practitioner who has been attending the deceased in his lifetime. Section 22 of the 1926 Act enables the coroner to request any duly qualified practitioner (whether the deceased's medical attendant or not) to make the examination; he can also ask some specially qualified person to make a special examination. Coroners are making, quite properly, an increasing use of this latter power. Without wishing to restrict their discretion in this respect, the British Medical Association wants to safeguard the position of the deceased's medical attendant by (*a*) allowing him to be present at the autopsy (without statutory fee) where he does not himself conduct it, and (*b*) giving the coroner a statutory discretion to invite the deceased's medical attendant to be present at the post-mortem examination at a statutory fee of £1 1*s.*

Other points in the Association's memorandum must be briefly mentioned. It would place the coroner and his procedure and practice more effectively under the control of the Lord Chancellor; it would require coroners to preserve their official records; and it would leave the viewing of the body, at present obligatory upon the coroner and discretionary or optional for the jury under Section 14 of the 1926 Act, to be optional for the coroner also. It would encourage the coroner to dispense with an inquest where death occurs after surgical operation before complete recovery from the anæsthetic, in any case where both the coroner and the relatives are satisfied after proper opportunities of inquiry that there was no neglect. The Association would similarly enlarge the coroner's discretion to dispense with an inquest in certain cases where, though at present required by Section 3 (1) of the 1887 Act to investigate because there is reasonable cause to suspect violent or unnatural death, he is nevertheless himself satisfied that the case is free from suspicion and that the holding of an inquest will serve no useful purpose. Here the Association has in mind the type of case where a person of advanced age dies from injury or where death occurs from bacterial food poisoning when there is no suspicion or element of doubt as to the cause of death. Finally, the Association suggests that statutory protection should be given to the medical practitioners on whose conduct comment has been made during an inquest. The practitioner, it is suggested, should have a right to offer rebutting evidence, to be legally represented if he so desires, and to have an adjournment of the inquest for this purpose. The normal exercise of the judicial function should secure this measure of fair play, and possibly Parliament will be reluctant to tie the coroner's hands.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

SPECIAL SCHOOLS

THE needs and the faults of special schools were emphasised at the sixteenth biennial conference of the National Special Schools Union held in Edinburgh last week. Dr. G. J. Linklater, school medical officer for the city of Edinburgh, emphasised the great need for an institution in which rheumatic children could be given adequate rest and also educated; it is impossible for them, as he said, to get proper rest in working-class homes. Prof. Drever, of the chair of psychology, severely criticised the special school for mental defectives on the ground that segregation under medical certification of children a fair proportion of whom were capable of becoming self-supporting citizens could not be justified from a social point of view. The use of the term "mentally defective" was an initial mistake, and its effects were not going to be easily eradicated. Miss C. R. Grant and Dr. Douglas Guthrie referring to speech disturbances, emphasised the importance of coöperation between the teacher and the speech clinic.

THE SHARPEY SCHAFER LECTURESHIP

The Sharpey Schafer lectureship in physiology in the University of Edinburgh was formally inaugurated last week when Sir Charles Sherrington lectured on Sir Edward Sharpey Schafer and his contributions to neurology. The prosperity of physiology was one of Sir Edward's most cherished aims. He had an exceptionally wide outlook on his subject and his published contributions ranged over subjects so diverse as the origin of life, the migration of birds, the endocrine organs, the cortex of the brain, and the pulmonary circulation. His early work on the endocrine glands has proved to be of the greatest importance, and his investigations of the cerebral cortex were also most significant.

LEWIS CAMERON FUND

The first appointment under the scheme recently approved by the court of session for the administration of the Lewis Cameron Fund has been announced at a meeting of the university court of the University of Edinburgh. Mr. C. G. Anderson, Ph.D., has been appointed Lewis Cameron teaching fellow in the department of bacteriology. Mr. Anderson, who is a graduate of the University of Birmingham, is at present a member of the teaching staff of the London School of Hygiene and Tropical Medicine.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE QUALITY OF FRENCH BREAD

BREAD being to a Frenchman what the potato is to an Irishman, it is astonishing that he has never yet made violent protest against the execrable concoction which looks like a loaf and acts like a brick-bat inside him. Before the war there was nothing to complain of, unless it were that wholemeal bread was difficult to obtain. And as it was demanded only by a small group of food faddists, the failure of French bakers to produce it did not matter. The war, however, brought revolution to the daily bread. Rice, maize, barley, and other substitutes for wheat figures in various proportions in the loaf which, when at last it reached the consumer, was so small that the possibilities of further diminution put thoughts of quality out of his mind. Ever since the war, the French have been asking themselves with growing querulousness why their bread has been getting worse and worse instead of better and better. There is a glut of wheat which should render substitutes superfluous. But what is probably an even more serious matter than the surreptitious employment of wheat substitutes is the modern baking technique which suits the convenience of bakers rather than the stomachs of consumers. Opinion has now become so strong that an appeal has been made to the Academy of Medicine in the hope that this august body will find a way back to the palatable and digestible pre-war loaf. In a recent communication to the Academy, Dr. Henri Labbé made the startling statement that things had come to such a pass that Frenchmen eat about 20 per cent., less bread than they used to. Among the needful reforms—apart from the disuse of substitutes—he places in the first rank a return to yeast and the rather leisurely procedures which its employment entails. It may be that ferments derived from molasses accelerate the processes of baking and require less skill and patience, but they yield a loaf lacking the palatability which one is justified in asking. The ideal fuel for baking he says is wood. Gas and electricity come next. Last, and easily the worst, is the mazout, or crude oil preparation, whose comparative cheapness has been the cause of its ousting wood. Dr. Labbé considers *mazout* such an important cause of the badness of the present-day loaf that he would like this fuel to be prohibited for baking. He concluded with a tilt against the abolition of night baking. It has, in his opinion, prompted expedients, short-cuts, and technical compromises which have seriously impaired the loaf's intrinsic value. How to give the baker sleep and his customer a good digestion? Dr. Labbé's answer is the central bakery, large enough to be staffed with three teams each of which works for eight hours. A continuous 24-hour cycle would thus be created and, let us hope, "the bread will again become the healthy, economic, savoury, digestive and energetic food to which our fellow-countrymen are accustomed by tradition."

SHOULD DOCTORS STARVE IN TOWN OR COUNTRY?

Correspondence in *Concours Médical* has enabled various writers to express their views on the present distressing plethora in the medical profession. One of them has exposed a fallacy which, he fears, may not be recognised as such by earnest young men lacking discernment. They are being told that in Paris there is one doctor to every 600 inhabitants, whereas in certain country districts there is hardly one doctor to every 3000 inhabitants. The unwary may be tempted to conclude from this comparison that their chances of making a living will be five times greater in the country than in a town. One correspondent has put the matter in a nutshell. "All who discuss the plethora neglect an enormous factor—the wealth of the inhabitants. One doctor for 600 or for 5000 inhabitants—that means nothing. It is statistics, it is a lie. It is not the inhabitants who enable the doctor to live, it is not even merely the patients, but only those who take care of themselves. To take care of yourself, you must have money; and the whole crux of the matter is there." In other words, it behoves the would-be medical settler in a new district to count incomes, not heads. A rough-and-ready way of such counting is to note the number of jewellers in the area in question. Another is to visit its cemetery and see if its monuments are costly and well preserved or not. There is a third way, but it leads nowhere. It is to note where other doctors are most and least numerous.

STOCKPORT INFIRMARY.—A new block is to be erected at Stockport Infirmary at an estimated cost of £35,000. It is to include two operating theatres, two wards of 24 beds each, and a lower ground floor providing further accommodation.

HOSPITAL AND PRACTITIONER

AN ADDRESS BY DR. COX

IN opening extensions at the Wilson Hospital, Mitcham, last Saturday, Dr. Alfred Cox, late medical Secretary of the British Medical Association, made some cogent comments on the relationship of hospitals to private practitioners. He pointed out that the recognition of the hospital as a part of communal life, in which the man in the street ought to take an interest, was a comparatively recent thing. There had been hospitals of course for centuries, but only in the last fifty or sixty years had they been regarded as essentials. "When I was a young man," said Dr. Cox, "practically everything in the provision of health was done by the family doctor. There were few consultants, and very few medical officers of health or sanitary officials; hospitals were few and centralised, and to go to hospital was regarded by most people as the very last resort, and often as equivalent to a death sentence. Nowadays the health service is recognised to be a *team* composed of medical officer of health, family doctor, consultant, hospital and many auxiliary services. It is as impossible to say which is the most important member of the team as it is to say which leg of a three-legged stool is the most important. But I believe that, to change the metaphor, the family doctor is the keystone of the building. It is necessary to say this because these are the days of 'publicity,' and the work done at hospitals is so much more sensational and dramatic that the quiet day-to-day work of the family doctor is in danger of being overlooked. He makes no appeal in the newspapers and gets no limelight. But without him the hospital and the specialist would be far less useful than they are."

"I reckon," continued Dr. Cox "that a patient who can be seen in consultation by his family doctor and the surgeon who is going to operate, starts his operation with at least a 20 per cent. advantage. And remember that for once that a person needs to go into hospital he is likely to need his family doctor ten times. With a long experience, both as a general practitioner and as an organiser of the medical profession, I say that a family which has a reliable and trusted home doctor are much less likely to require hospital treatment than one which has no such adviser, and when they do require it are likely to get more benefit from it. . ."

"Most doctors in the big towns, and indeed over large parts of the country, have no direct connexion with a hospital, whereas if they are to be as useful as they should be to the public as family doctors, the connexion cannot be too close. . . Every doctor will tell you that the doctor who has the luck to be on the staff of a hospital has great advantages, because the hospital is the very centre and spring of all medical knowledge. Books, medical meetings, lectures are all very well in their way, but nothing can take the place of the hospital. There the doctor can use many methods of treatment which cannot be carried out at his surgery or in his patients' homes; there he is in contact with his colleagues and nothing is so likely to keep him up to the mark; there he is under the critical observation of the nurse, who is a very good judge of what a doctor should be; and there he can get the advice of specialists who are at his call when required. I wish every district in this country could follow the example of Mitcham and provide for its doctors a place in which their education could be continued, in the only place that it *can* be carried on properly—namely in a hospital. And obviously the knowledge and skill they acquire there is available in their daily work for people who may never see the inside of a hospital."

Turning to the proper use of out-patient departments Dr. Cox said there were three purposes for which such departments could be legitimately used: (1) for accidents and emergencies; (2) for special examinations and forms of treatment which cannot be done well, or cannot be done at all, at home or in the doctor's surgery; (3) for consultation purposes where the family doctor wants further advice. About the first two objects there was no difference of opinion, but unfortunately many hospitals deliberately encouraged the use of their out-patient departments so that in appealing for subscriptions they might boast about the large numbers of out-patients—whereas they ought to be ashamed of them. "It is like using a steam hammer to crack a nut, to use a hospital for such purposes, and a shocking waste of the subscribers' money and the doctors' time. Why should hospitals encourage people to apply for charity when the thing they need can quite well be supplied at their own cost? If they find difficulty in paying doctors' bills they can, in any part of London, and in most large centres now, get the doctor of their own choice without any suspicion of charity, through the public medical service which provides them with a family doctor on easy terms, and if the doctor thinks they need to go to hospital he will send them there with a statement about their case which will greatly help the consultant in giving his opinion.

"Moreover, the out-patient department which does what I am complaining about has a very bad effect on the doctors who have to live by their practices which the out-patient departments are poaching from them. These doctors, finding much of their work being filched from them by the very institutions often which have trained them, naturally become less interested in their profession, less experienced in their practice, and therefore less useful to the public they are supposed to serve. . .

"The medical service of the future ought to have as its object to prevent as much sickness as possible, to catch cases that do arise as early as possible, and to treat those who fall ill with every available means. It could be done easily enough by a form of insurance to which all but the really well-off should contribute. There should be no charity about it either inside or outside the hospital. I venture to say that for a mere fraction of the amount now spent on cinemas, dancing, beauty preparations, and wireless apparatus, every member of the public could be given a first-class health service. It's a curious thing, however, that after long years of compulsory education an idea of this kind should be regarded as utopian. To most people the pleasures of life are vastly more important than its necessities, and people who would scorn the mention of charity as regards their food and clothing think it quite natural to apply for it in connexion with their health. I am particularly glad to find that in this hospital people are expected to pay according to their means. Charity is a blessed thing, but it is not as important as the cultivation of self-respect and independence."

ALEXANDRA HOSPITAL FOR CHILDREN, SWANLEY.—Lady Cornwallis has opened a new nurses' home at this institution. It has cost £20,000 and has accommodation for 40 nurses.

PANEL AND CONTRACT PRACTICE

In the Matter of Fee-charging

It is quite a common occurrence in insurance practice for a patient who has been treated privately to apply later for the withdrawal of the account or for a refund of fees paid. Under Clause 7 (3) of the Terms of Service if a person in applying for treatment does not represent himself to be an insured person, but subsequently ("within one month from the date of the presentation by the practitioner of an account or the payment to the practitioner of any fee or the last of any fees paid, where no account is rendered, in respect of that treatment") requests the insurance committee to secure the withdrawal of the account or the refund of the fee(s) and the committee are satisfied that he was eligible to receive treatment from the practitioner as an insured person, the committee may, if they think fit, require the practitioner to withdraw his account or recover from him the fee(s) paid by the applicant. In either event they must credit the practitioner with the remuneration to which he would have been entitled if the applicant had been attended by him as a temporary resident and with payments calculated on the basis of the drug tariff in respect of any drugs and prescribed appliances supplied to the applicant. In the event of their allowing the insured person's application the committee have power to inflict a penalty not exceeding *2s. 6d.* Cases of this type cause much misunderstanding and frequently annoyance to the practitioner concerned, and it may be by no means easy for an insurance committee to determine whether the applicant was eligible to receive treatment from the practitioner as an insured person. It may be useful to cite briefly some cases recently reported to insurance committees in three of which the committee decided that the application should not be granted.

(1) A.B. when applying for treatment made no representation of his title to benefit under the Acts, and in reply to an inquiry from the committee the doctor stated that Clause 7 (3) would not, in his opinion, meet the case as he was dealing with well-to-do people who could well afford reasonable fees. It was pointed out to the doctor that these circumstances could in no way affect the obligations accepted by him in his agreement with the committee, and as the person was entitled to receive medical benefit he could not be deprived of the rights which the Acts confer. Under the terms of service a doctor is not permitted to demand or accept any fee or other remuneration in respect of treatment required to be given thereunder except the remuneration to which he is entitled from the insurance committee. The doctor then furnished the committee with a statement signed by the insured person to the effect that he did not expect to receive treatment under the insurance scheme but that he wished to be treated as a private patient and to pay the doctor his normal fees. Even a horse led to the trough cannot be compelled to drink and the committee decided that the application for refund should be disallowed.

(2) C.D. on marriage removed from the area of the insurance committee but was advised by her approved society of the benefits to which she was entitled as a married woman. Returning temporarily to her former home in the committee's area she required medical treatment while there. The doctor called inquired if she was entitled to medical benefit and, being informed by her that she was not, he treated her privately. Her husband consulted the committee, and was informed that, having regard to the wife's statement to the doctor, the committee had no power to call upon him to withdraw his account. The woman who gives up work on marriage provides a large proportion of cases which require to be dealt with under Clause 7 (3). She is apt to think that, as she is no longer entitled to the ordinary benefits of an employed contributor, her title to medical benefit has also ceased. Later she learns that medical benefit continues for a period after cessation of employment and then endeavours to secure repayment of the money paid to the doctor. Broadly speaking, the position of a woman employed up to the time of her marriage is that medical benefit continues until June 30th or Dec. 31st, whichever first occurs after the expiration of a year from the end of the eighth consecutive week of unemployment.

(3) E.F. was taken ill in the night and an insurance doctor, other than the one in whose list E.F.'s name was included, was called to give treatment. The doctor who attended was informed that E.F.'s own doctor was not called as he was too far away and in these circumstances it was suggested that the patient should transfer. No steps were however taken to do this until a week later. The doctor stated he was not prepared to submit a claim for treatment given in case of accident or other sudden emergency as there was, in his opinion, a growing feeling amongst insurance patients that they could call in any doctor they wished at any time and he considered that this was a typical case. The committee were not satisfied that there were reasonable grounds for failing to call in the insurance doctor responsible for the patient's treatment and the application failed. There is often an honest difference of opinion as to what constitutes an emergency. In the mind of the patient and his relatives there may be emergency, while the examining practitioner may form a contrary opinion. The patient can hardly be expected to differentiate abdominal pain caused by indigestion from the symptoms of appendicitis, and committees find it difficult to determine whether an emergency existed or not. If the insured person's own doctor is summoned and the call proves unnecessary the practitioner may feel annoyed but the patient is relieved of anxiety. If however the responsible practitioner lives at some distance and the "nearest doctor" is called in he may consider that medically there was no emergency and be disinclined to submit an application for payment as though it were. Yet if he charges the patient he is taking from the insurance and the panel committee the right to determine whether the patient was eligible to receive treatment from him as an insured person. If therefore the doctor who is summoned wishes to claim a fee for his attendance he will be well advised, when made aware that the patient is an insured person, to claim on the appropriate form and leave it to the committee to decide whether there was an emergency or not. The Ministry have advised a panel committee that in cases of this type their tendency should be in the direction of giving the patient the benefit of any doubt.

(4) G.H., an insured person, was on the list of Dr. A. but obtained treatment from his partner, Dr. B., under the impression that Dr. B. would undertake responsibility as deputy for Dr. A., Dr. B.'s surgery being open on the only evening in the week upon which she was able to consult the doctor. After attending Dr. B. for a special form of treatment by arrangement with Dr. A. she subsequently consulted Dr. B. upon another matter when he took the attitude that he was not responsible for her treatment and referred her to his partner. Arrangement was then made between them for the patient to be treated privately for which an account in the name of the partnership was rendered. An officer of the committee interviewed the patient and both doctors with the result that the account was cancelled and Dr. A. gave consent to the transfer of the patient to the list of another doctor. Although the insured person stated that the question raised by her had been satisfactorily adjusted, the committee felt it necessary from the point of view of general administration to call the attention of both doctors to the obligations accepted by them under their terms of service regarding deputies and partners. Clause 11 (8) provides in the case of two or more practitioners practising in partnership that treatment may at any time be given by a partner of the practitioner in whose list the patient is included, instead of by the practitioner in person,

provided that reasonable steps are taken to secure continuity of treatment. In the case of a partnership the patient cannot demand that treatment shall be provided by the doctor by whom he has secured acceptance, as he can in the case of principal and assistant.

An American Plebiscite

The introduction of compulsory health insurance into the United States is now being much discussed by dentists as well as doctors, and *Oral Hygiene*, an American dental journal, has lately tried to ascertain what views are held by the dental profession as a whole. The issue has become pressing, it is felt, because of the reduction in incomes from private practice.

To a questionnaire circulated last January replies were received from 5846 dentists, forming rather more than 9 per cent. of the number registered—which it appears is a high proportion of voters for an American journalistic poll. It is stated that the poll was taken in a serious spirit by those participating, for "flippant and scurrilous remarks or the comments of cranks and crack-pots were made on only five ballots." Analysis shows that the principle of health insurance was approved by 4513 votes against 1294, and on the question whether dental care should be included as a statutory or an additional benefit, the inclusion as a statutory benefit was supported by 4432 votes against 56. There was a consensus of opinion that the application of a health insurance scheme should be restricted to persons with a family income not exceeding $1500 (£300). Replies were also invited on the questions whether the dental services provided under health insurance should be "limited" or "adequate," and whether they should be confined to wage-earners only or be extended to the members of their families. An "adequate" service was approved by 3232 votes to 1138, and extension to the families by 3936 to 274. A considerable number of voters supplemented their answers to the questions by expressions of opinion on various other points. Many of them thought that immediate action was necessary to "bring the producer and consumer of medical and dental services together," but some, though they favoured the principle of health insurance, feared that it might lead to "political domination and control." By some voters it was thought that health insurance would eliminate the advertising dentist.

The results of the poll suggest a remarkable change of view in American dental circles; it is highly improbable that so high a proportion of votes would have been cast in favour of health insurance a few years ago. A similar attempt to ascertain the views of the medical profession in America might yield interesting results. Such a poll affords an opportunity for expressions of opinion from the rank and file, many of whom, though not prominent at meetings or in the correspondence columns of professional journals, have formed definite views and are prepared to act on them at the appropriate time.

School Medical Records

It has long been felt that the value of the forms of medical record relating to insured persons would be increased if the records of treatment during school life could be made available for incorporation therein. A subcommittee of the London County Council's education committee has been considering a resolution from the London Teachers Association urging, first, that school medical record cards should be transferred to the National Health Insurance doctor concerned as soon as a child enters insurance employment, and, secondly, that clinics should be established throughout London where young people of 14 to 18 may obtain free medical advice. The subcommittee informed the Association of the experiment approved by the Council on Feb. 6th, 1934, and April 9th, 1935, for the medical inspection and treatment of students under 16 attending day continuation schools and certain evening institutes, and of the arrangements for the medical inspection of young persons of 14 to 18 years of age attending junior instruction centres. The suggestions in the resolution cover an appreciably wider field than that contemplated in the experiment, but the education committee is not prepared to recommend any further development pending consideration of the results of what is already being tried. Meanwhile it was made clear that there is no objection to the transfer of school medical record cards to panel doctors if they apply for them, and it is to be hoped that wide publicity will be given to this useful concession.

THE SERVICES

INDIAN MEDICAL SERVICE: ANNUAL DINNER

One hundred and seventeen officers of the Indian Medical Service dined together on June 19th at the Trocadero, when Major-General E. A. Walker, C.B., K.H.S., director of medical services in India, presided. The attendance was larger than last year which was itself a record. The members of the Service present were as follows:—

Major-Generals: W. V. Coppinger, C.I.E., D.S.O.; H. Boulton, C.B., C.B.E.; B. H. Deare, C.I.E.; W. C. H. Forster, C.I.E.; Sir John Megaw, K.C.I.E.; C. W. F. Melville, C.B., K.H.P.; Sir Leonard Rogers, K.C.S.I., C.I.E., F.R.S.; and G. Tate, C.I.E.

Colonels: H. Ainsworth; J. Anderson, C.I.E.; J. Crimmin, V.C., C.B., C.I.E.; P. Dee; A. B. Fry, C.B., C.I.E., D.S.O.; T. A. Granger, C.M.G.; C. R. M. Green; E. C. Hodgson, D.S.O., K.H.P.; W. H. Leonard, C.B.; H. M. Mackenzie, C.I.E.; F. P. Mackie, C.S.I., O.B.E.; Sir Richard Needham, C.I.E., D.S.O.; A. H. Proctor, D.S.O.; Ashton Street; H. H. Thorburn, C.I.E.; R. G. Turner, C.M.G., D.S.O.; J. Norman Walker, C.I.E.; N. M. Wilson, O.B.E.; and C. N. C. Wimberley, C.M.G.

Lieut.-Colonels: H. W. Acton, C.I.E.; A. C. Anderson; F. J. Anderson, M.C.; L. A. P. Anderson; S. Anderson; C. H. Barber, D.S.O.; A. N. Bose, M.B.E.; R. H. Bott, C.I.E.; N. Briggs; H. H. Broome, C.I.E.; R. N. Chopra; H. P. Cook; A. G. Coullie; D. G. Crawford; J. M. Crawford, O.B.E.; J. B. Dalzell Hunter, O.B.E.; C. D. Dawes; J. C. De; A. Macdonald Dick, O.B.E.; H. R. Dutton, C.I.E.; S. C. Evans; C. H. Fielding; J. K. S. Fleming, C.B.E.; E. S. Goss, M.C.; G. F. Graham; V. B. Green-Armytage; F. Griffith; A. E. Grisewood; A. F. Hamilton, C.I.E.; W. G. Hamilton; W. L. Harnet, C.I.E.; H. Hingston; J. M. Holmes; T. A. Hughes; E. V. Hugo, C.M.G.; M. L. C. Irvine; S. P. James, C.M.G., F.R.S.; I. Davenport Jones; R. N. Khosla; J. B. Lapsley, M.C.; J. C. H. Leicester, C.I.E.; A. C. Macrae; E. C. G. Maddock, C.I.E.; J. S. S. Martin; W. A. Mearns; T. R. Mulroney; B. E. M. Newland; F. O'Kinealy, C.I.E., C.V.O.; E. J. O'Meara, O.B.E.; E. S. Phipson, D.S.O.; H. Ross, C.I.E., O.B.E.; J. D. Sandes; R. B. S. Sewell, C.I.E.; M. Anup Singh; H. B. Steen; R. Steen; W. A. Sykes, D.S.O.; A. N. Thomas, D.S.O.; C. Thomson; E. Owen Thurston; R. S. Townsend, M.C.; E. L. Ward, C.B.E.; E. E. Waters; W. L. Watson, O.B.E.; and J. D. R. Webb, O.B.E.

Majors: P. M. Antia; S. L. Bhatia, M.C.; H. C.

Brown, C.I.E.; J. Carrey; J. A. Cruickshank, M.C.; Hari Das; P. A. C. Davenport; J. E. Dhunjibhoy; Sir T. Carey Evans, M.C.; W. L. Forsyth; N. H. Hume; D. V. O'Malley, O.B.E.; C. G. Seymour; and F. Norman White, C.I.E.

Captains: J. H. Boultbee; H. J. Curran; A. V. O'Brien; and Jaswant Singh.

Officers on probation: Capt. E. C. Hicks; Lieut. J. Duffy; Lieut. J. T. Franklen-Evans; Lieut. J. Reidy; Lieut. A. W. Sampey; and Lieut. G. C. Welpley.

The last six mentioned were present by invitation, and the other guests were Lieut.-General Sir James Hartigan, K.C.B., C.M.G. (director-general of Army Medical Services), Prof. F. R. Fraser, Mr. W. D. Tomkins (of the India Office), Dr. N. G. Horner (*British Medical Journal*), and Dr. Egbert Morland (*The Lancet*).

After giving the loyal toast, General Walker read a congratulatory telegram from the director-general (Major-General C. A. Sprawson) and officers in India, and proposed "The Service." Previous chairmen of that dinner had, he said, referred mostly to the past. "For myself," he added, "I feel the Service has a future. The day of the I.M.S. is not over. Any organisation possessing the power of adapting itself to changing circumstances which the I.M.S. has always shown is secure." In the future the military element in the Service would be a large one. In 1916 his capture by the Turks in Mesopotamia had given him time to think out Service problems; since then conditions had vastly improved in spite of cuts and financial depression, owing largely to Colonel Alister McNeill, I.M.S., and Colonel Rees Williams, I.M.S. He ended by remarking that the Service was now getting a very high class of recruit.

Sir Leonard Rogers, proposing "The Chairman," recalled his distinction on the civil side in Rangoon before he reached his present position on the military side. He agreed with his estimate of the growing importance of the military branch, while satisfied that the civil branch also had its future. He congratulated Sir James Hartigan on his recent honour and on the cordial relations existing between the R.A.M.C. and the I.M.S. in India.

There were no other speeches, but Colonel Anderson, who has attended every annual dinner and is now within sight of his eightieth birthday, was induced to tell some stories. The staff work of the dinner secretaries was tacitly acknowledged.

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. R. P. Ninnis to *Victory* for Portsmouth Dockyard, and J. D. Bangay to *Cardiff*.

Surg. Comdr. L. A. Moncrieff placed on the Retd. List, at own request, with rank of Surg. Capt.

Surg. Lt.-Comdrs. W. P. E. McIntyre to *Pembroke* for R.N.B., G. A. Miller to *Hermes*, and C. Keating to *President* for course.

Surg. Lt. G. D. Wedd to *Amphion* and to *Victory* for R.N. Hospl., Haslar.

APPOINTMENTS

It is announced that there will be nine vacancies in September, 1935, for Medical Officers in the Royal Naval Medical Service. Candidates must not be above the age of 28 years. No examination in professional subjects will be held, but candidates will be required to attend for interview by a Selection Board. Copies of the regulations may be obtained from the Medical Director-General of the Navy, Admiralty, S.W.1, and from the Deans of all Medical Schools. Applications for entry must be received not later than July 31st.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Capts. L. S. Ashcroft to *Valiant* and J. B. Ronaldson to *Renown*.

Surg. Comdrs. L. C. D. Irvine to *Nelson*, T. W. Drummond to *Curacoa*, W. C. Macartney to *Vindictive*, F. L. Cassidi to *Hawkins*, and S. W. Davidson to *Calypso*.

Surg. Lt.-Comdrs. G. A. Mason, J. B. Hutchinson, and A. S. Bradlaw to *Drake* for R.N.B., and to *Ramillies*; S. B. Borthwick to *Pembroke* for R.N.B., and to *Victory* for Haslar Hospl.; W. P. Elford to *Pembroke* and to *Excellent*; St. G. B. D. Gray to *Broke*; G. McCoull to *Montrose*; F. E. Stabler to *Campbell*; R. Wear, L. D. Nelson, R. J. Matthews, and H. M. Willoughby to *Victory* for R.N.B.; A. H. Shellswell to *Effingham*; T. G. Evans to *Vernon*; B. W. C. Archer to *Vivien*; F. T. Doleman to *Pangbourne*; and A. L. Gunn to *Pembroke* for R.N.B.

Surg. Lt.-Comdr. (D.) E. D. Collins to *Victory* for R.N.B.

Surg. Lts. C. Mason, G. F. S. Parker, and R. D. Bradshaw promoted to Surg. Lt.-Comdrs.

Surg. Lts. G. H. C. R. Critien to *Rodney*; C. A. Mather to *Pembroke* for R.N.B., and to *Shropshire*; D. W. Bawtree to *Drake* for R.N.B., and to *St. Vincent*; W. H. Roberts to *Pangbourne*, R. S. Rudland to *Vivien*, D. Simpson to *Montrose*, E. F. St. J. Lyburn to *Campbell*, R. G. Reid to *Rodney*, A. B. Concanon (proby.) to *Pegasus*, and W. G. Campbell (proby.) to *Shropshire*.

Surg. Lts. (D.) A. C. Fuller (proby.) to *Pembroke* for R.N.B., and to *Rodney*; C. E. Brittan to *Drake* and to *Victory* for R.N. Hospl., Haslar; and A. B. Bateman to *Rodney*.

Proby. Surg. Lt. N. A. Vernon to *Leander*.

Proby. Surg. Lt. G. E. M. Benson to be Surg. Lt.

Proby. Surg. Sub-Lt. R. T. Gaunt to be Surg. Sub-Lt.

Proby. Surg. Sub-Lts. R. T. May to *Nelson*, J. A. Shepherd and D. S. Macphail to *Barham*, D. M. Edwards to *Rodney*, W. H. Osborn and J. B. W. Hayward to *London*, R. F. B. Bennett and P. H. K. Gray to *Renown*, G. R. Dodds to *Hood*, G. S. Irvine to *Revenge*, R. P. Phillips to *Echo*, C. P. Nicholas to *Shropshire*, and R. V. Jones to *Devonshire*.

ARMY MEDICAL SERVICES

Col. G. A. D. Harvey, C.M.G., has been selected for promotion to the rank of major-general with effect from Oct. 6th, and to be a Deputy Director of Medical Services in India, in succession to Major-General J. F. Martin, C.B., C.M.G., C.B.E.

Brevet Col. W. B. Purdon, D.S.O., O.B.E., M.C., Assistant Director of Hygiene, British Troops in Egypt, has been selected for appointment as Professor of Hygiene, Royal Army Medical College, with effect from August 18th, in succession to Colonel G. S. Wallace.

Brevet Col. J. M. Weddell, F.R.C.S., has been selected for appointment as Professor of Military Surgery and Consulting Surgeon to the Army, Royal Army Medical College, with effect from August 27th, in succession to Major-General J. W. West.

Col. H. M. J. Perry, O.B.E., Director and Professor of Pathology, Royal Army Medical College, will be promoted to the rank of major-general (supernumerary), with effect from Sept. 26th, and will continue in his present appointment.

ROYAL ARMY MEDICAL CORPS

Maj.-Gen. D. J. Collins, C.B., C.M.G., M.D., ret. pay (late R.A.M.C.) is apptd. Col. Comdt. (June 25), vice Maj.-Gen. Sir A. P. Blenkinsop, K.C.B., C.M.G., ret. pay (late R.A.M.C.), who has attained the age limit for his appt.

Short Serv. Commissions: Lt. (on prob.) R. Phillipson is restd. to the estabt.

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. J. M. B. Rahilly, O.B.E., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj. I. J. Williams having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE

Wing Comdr. D. McLaren to R.A.F. Depôt, Middle East, Aboukir, for duty as senior medical officer.

Squadron Leaders C. A. Lindup to Aeroplane and Armament Experimental Establishment, Martlesham Heath, for duty as medical officer; A. A. Townsend to

(*Continued at foot of next page*)

PUBLIC HEALTH

Mental Deficiency Certification

NEW Mental Deficiency Regulations, issued by the Minister of Health, contain changes of interest for the medical practitioner. In the procedure on petitions, for instance, the period of time between the examination of the patient and the presentation of the petition has been extended from 7 to 21 days. A new form of medical certificate (P4), for all cases dealt with by petition, obliges the doctor to state that he has read the statutory definitions—of "idiots," "imbeciles," "feeble-minded persons," and "moral defectives"—in Section 1 of the Mental Deficiency Act of 1927. A circular letter, sent out by the Board of Control with the new regulations, draws the particular attention of certifying medical practitioners to the new Article 18. This enjoins that every medical certificate accompanying a petition must state the facts on which the signatory has formed his opinion that the alleged defective is a defective within Section 1 of the 1927 Act; it must distinguish facts observed by the signatory himself from facts communicated by others, and an order is not to be made upon a certificate not founded wholly or in part upon facts observed by the signatory. No order is to be made unless each signing doctor has personally examined the patient within 21 days of the presentation of the petition. The Board of Control remarks that it is desirable that the medical certificates should be obtained from medical practitioners who have some knowledge of the patient's history or who possess special experience in dealing with mental deficiency. Section 5 (2) of the 1913 Act requires, of course, that one medical certificate shall be signed by a medical practitioner approved for the purpose by the local authority or by the Board. The old regulations of 1914 endeavoured to secure that one certificate be given by the patient's usual medical attendant. The Board now says that this latter requirement has proved impracticable. The new regulations make so such stipulation, but the Board expresses a hope that, where it is known that the alleged mental defective has been under the regular care of a medical practitioner, every effort will be made to obtain from him one of the certificates to accompany the petition. Article 18 prohibits signature of a certificate by the petitioner or by the petitioner's husband or wife, father or son, mother or daughter, brother or sister, or by certain other relations, or by a partner or assistant. An order sending a defective to an institution or certified house, or placing him under guardianship, is not to be made where a certificate or statutory declaration accompanying the petition is signed by the managers of the institution, or the owner of the certified house, or by the proposed guardian, or by anybody interested in payments for the patient's maintenance, or by the superintendent, or medical officer of the institution or certified house, or by the husband, wife, father, mother or other specified relatives, or the partner or assistant of any of the foregoing persons. It is hard to see what further precautions could have been enacted to exclude any possibly improper interest in the proceedings.

The new regulations are slightly shorter in places than the original provisions of 1914 and 1915. Certain administrative matters are left to be dealt with by circular. The Board expects that local authorities will coöperate closely with local education authorities, police authorities, public assistance committees, institutions and charitable societies or voluntary associations. It rightly emphasises, too, the need for early medical examination of any case of mental defect brought to the notice of the local authority, and for full information of the patient's history and circumstances. If a patient is moved into another local authority's area, this information is to be forwarded to that area. With the rest of the regulations dealing with the management of institutions and certified houses, with guardianship and the steps required when a patient is transferred from guardianship to an institution, and with the system of licensing and leave of absence there is here no space to deal. It may be mentioned, however, that the Board is reminding local authorities of the need of suitable medical attendance for defectives who are under guardianship. Guardians are to be told of the medical arrangements made, and of the steps to be taken immediately medical aid becomes necessary. The Board considers that guardians should not have recourse to a relieving officer to secure medical attendance for patients; provision for this, the Board observes, should be made under the Mental Deficiency Acts. If the new system seems complicated by its reliance on the threefold elaboration of statutes, regulations, and administrative circulars, it gives evidence at any rate of a progressive and sympathetic policy.

(*Continued from previous page*)

R.A.F. Station, Worthy Down, for duty as medical officer; E. D. D. Dickson to Central Medical Establishment, for duty as Medical Officer with No. 2 Central Medical Board; R. W. White to No. 1 Air Defence Group Headquarters, for duty as medical officer.

Flight Lts. R. N. Kinnison to R.A.F. Officers' Hospital, Uxbridge; M. T. O'Reilly to No. 25 (F) Squadron, Hawkinge; G. O. Williams to Central Medical Establishment; C. R. Palfreyman to Central Medical Establishment.

Flying Offr. J. S. Wilson to No. 26 (Army Coöperation) Squadron, Catterick.

Colonel N. Low, D.S.O., O.B.E., of Lucknow District Staff, is appointed Deputy Director of Medical Services, Eastern Command (Headquarters—Naini Tal), while Major-General C. W. F. Melville is on leave.

Major-General J. F. Martin, C.B., C.M.G., C.B.E., Deputy Director of Medical Services, Western Command (Headquarters—Quetta), is granted two months' leave from August 8th.

Cerebro-spinal Fever in Three Countries

The May issue of the *Bulletin* of the Office International d'Hygiène Publique contains reports on cerebro-spinal fever in India, the Anglo-Egyptian Sudan and Belgrade. Lieut.-Colonel A. J. Russell says that there have been several outbreaks in India since 1932, the most important being those of 1932–33 in the Borstal Institute at Lahore in the Punjab, where there were 27 cases with 11 deaths; of 1933–34 at Ahmadabad in the Bombay Presidency, where there were 592 cases with 271 deaths, and of 1933–34 in the city of Delhi where there were 127 cases with 122 deaths. Also sporadic cases have been notified in Chittagong and Baranagar in Bengal and in the city of Lahore, the Bombay Presidency, the Central Provinces, the North-west Frontier Province, Rajputana, the Central States, and Burma. During the first six months of 1934 1991 cases with 1216 deaths were notified in the whole of India, but these figures do not represent the complete incidence and mortality of the disease owing to the insufficient returns made. In India as elsewhere the deaths were most numerous in childhood and adolescence. As regards the types of meningococci most of those from the Delhi cases belonged to Type III., while of 35 strains from Calcutta cases 18 belonged to Type I. and 17 to Type III. Prophylactic vaccines prepared at the Kasauli Central Research Institute were being used, but it was too soon to come to any conclusion as to their value. No antimeningococcus serum had been prepared in India, and the results obtained with English serum had not been entirely satisfactory.

In his account of the severe outbreak of cerebro-spinal fever which occurred in the province of Kordofan in the Anglo-Egyptian Sudan in January to May, 1934, Mr. O. F. H. Atkey, F.R.C.S., states that there was a total of 4108 cases with 3251 deaths. Most of the patients belonged to the poorer classes; 78 per cent. were under twenty years of age; 43 per cent. were females, and of these 62·5 per cent. were under ten years. The only really successful preventive measure was evacuation of the affected villages, and in some instances complete reconstruction of the houses and installation of proper ventilation were carried out.

According to Prof. T. Simitch outbreaks of cerebro-spinal fever have hitherto been rare in Yugoslavia. During the last ten years the disease has only made a sporadic appearance in Belgrade. From 1926 to July, 1934, only 92 cases, of which 68 were in males and 24 in females, were treated at the Belgrade Clinic for infectious diseases. There were 45 deaths, of which 35 were in males and 10 in females. Treatment consisted in injection of antimeningococcus serum from various sources for 7–8 days in succession, two injections daily being given in the severest cases, in which the total dosage ranged from 120 to 200 c.cm. In cases in which a sufficient quantity of cerebro-spinal fluid was not withdrawn subcutaneous as well as intrathecal injection of meningococcus endotoxin was given, but the results were inconclusive.

Consultants in Municipal Hospitals

Dr. R. Veitch Clark, medical officer of health for Manchester, has prepared a scheme for the reorganisation of consultant services at three general hospitals in the charge of the public health committee—namely, Withington, Crumpsall, and Booth Hall. This scheme, which is now to be submitted to the city council, is intended to overcome three main defects in the present system: first, that the patient sees a consultant only if his condition seems to make consultation necessary; secondly, that the number of consultants and the number of visits they pay is quite inadequate; and thirdly, that the terms on which consultants are employed are unsatisfactory. In voluntary hospitals the visiting physicians and surgeons are actually (not nominally) responsible for diagnosis and treatment, and accordingly every patient is seen by a consultant as soon as possible after admission. In Dr. Veitch Clark's opinion this practice should be established in the municipal hospitals. He pays a warm tribute to the existing consultant staff; they have given their services unstintingly, putting in many more routine attendances than is required by their agreements and paying special visits daily or even more frequently according to the needs of the patients. Experience has shown, however, that the more effective the consultant practice in a hospital, the higher is the level of attainment reached by the hospital as a whole, and efficiency demands that the consultant staff shall be personally in charge of *all* acutely ill cases in the hospital. In preparing the scheme the object has been to allow for its development along lines which will make possible the closest collaboration with the work of the voluntary hospitals. The medical officer of health feels that if a single purpose is to animate the provision of the hospital needs of Manchester, both by the city council and by the voluntary hospital organisation, one of the best means towards this end is to interlace the actively practising medical staffs in such a way as to lead not only to fusion of interests but to collaboration, if not fusion, of practice.

The cost of the scheme as at present drafted will be £8000 a year. The *Manchester Guardian* of June 19th, from which these details are reproduced, describes it as one of the most important steps ever taken for the improvement of the public health services of the city.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 15TH, 1935

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 0; scarlet fever, 1688; diphtheria, 857; enteric fever, 17; acute pneumonia (primary or influenzal), 759; puerperal fever, 55; puerperal pyrexia, 124; cerebro-spinal fever, 23; poliomyelitis, 23; encephalitis lethargica, 5; *continued fever,* 1; dysentery, 10; ophthalmia neonatorum, 85. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 21st was 2844, which included: Scarlet fever, 884; diphtheria, 1062; measles, 43; *whooping-cough, 393; puerperal fever, 28 mothers* (plus 8 babies); encephalitis lethargica, 269; poliomyelitis, 1. At St. Margaret's Hospital there were 18 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 28 (0) from measles, 3 (0) from scarlet fever, 19 (6) from whooping-cough, 31 (0) from diphtheria. 38 (8) from diarrhœa and enteritis under two years, and 41 (4) from influenza. The figures in parentheses are those for London itself.

Sunderland reported the only fatal case of enteric fever. Six deaths from measles occurred at Sunderland and Birmingham, 5 at Liverpool. Bradford and Liverpool each reported 3 fatal cases of diphtheria; Newcastle-on-Tyne, Wakefield, Birmingham, and Plymouth each 2. Six deaths from diarrhœa occurred at Liverpool, 3 at Newcastle-on-Tyne.

The number of stillbirths notified during the week was 286 (corresponding to a rate of 47 per 1000 total births), including 48 in London.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A second refresher course in medicine, surgery, and the specialties, intended primarily for general practitioners, will be held at the Prince of Wales Hospital, London, N., from July 1st to 13th. A course in proctology is being given at St. Mark's Hospital from July 1st to 6th, and one in urology at the All Saints' Hospital from the 8th to the 27th. There is also to be a week-end course in general medicine and surgery at the Southend Hospital on July 13th and 14th, and a course in dermatology at the Blackfriars Hospital on week-day afternoons from the 15th to the 27th. Other items will be found in our Medical Diary. A panel of teachers is prepared to give clinical instruction in various branches. Full particulars may be had from the Fellowship at 1, Wimpole-street, London, W. 1.

CORRESPONDENCE

PROGNOSIS OF DIVERTICULITIS

To the Editor of THE LANCET

SIR,—I am a little surprised at the gloomy view aken by Mr. E. G. Slesinger regarding the prognosis f colo-vesical fistula complicating diverticulitis. r. Slesinger writes: "The prognosis in such cases always grave, and unless the cystitis is speedily elieved renal infection and death frequently follow." ome little time ago, largely through the courtesy f Sir John Thomson-Walker, I was able to investigate teen cases of this rare condition.[1] One of the st striking features of colo-vesical fistula is the lerance which the bladder develops to the presence f the fæcal material passing into it from the sigmoid olon. In only one of my cases was there evidence of infection ascending towards the kidney, the symptoms being limited to one attack of acute pyelitis, from which the patient recovered.

Regarding the treatment, Mr. Slesinger advises a colostomy with spur formation as the first essential, to be followed later by the radical operation upon the fistula, but I very much doubt the wisdom of thus setting forth a routine method of procedure. It is clear that in a number of cases the patient will be not fit to stand the radical operation, which necessarily carries a high mortality and unfortunately gives no guarantee of a permanent cure. Thus many patients will be left with a permanent colostomy. Reference to my cases shows how undesirable this may be, for again there is no guarantee that colostomy will improve the bladder condition to any appreciable extent. In one case the fistula actually developed twelve months *after* colostomy had been performed to relieve the diverticulitis. In a number of my cases the symptoms of diverticulitis itself improved considerably once the fistula into the bladder had formed, for this instituted a natural means of drainage of the inflammatory mass in the colon. The bladder symptoms are not severe, except possibly for the first few months after perforation has occurred, and the average patient will probably prefer to put up with the discomfort of these symptoms rather than the discomfort of a colostomy, especially as the surgeon cannot state definitely that colostomy will cure the bladder symptoms. In twelve of the nineteen cases no operative treatment was performed. One of these had been lost sight of, but in the other eleven the patient remained in fair health, only one of them developing ascending infection. Cystoscopy carried out on these patients showed the bladder wall to be remarkably free from cystitis except for a small area surrounding the opening of the fistula. Of four patients in whom the radical operation was performed, the fistula recurred in one and the patient therefore did not benefit. In the second, the first attempt at closure failed but the second attempt was successful. In the other two cases stormy convalescence followed operation but the patients finally recovered. It is clear therefore that although in theory the radical treatment is the ideal procedure it is only applicable to a few cases in whom the fistula is not of long duration and who can be regarded as good operative risks. I am in complete agreement with Mr. Slesinger that a preliminary colostomy should be done a considerable time before the direct attack upon the fistula is made.

Regarding the incidence of diverticulosis, Mr. Slesinger's figure of 10 per cent. of people over the age of forty is probably an overstatement. W. J. Mayo found diverticula post mortem in 5 per cent. of people over the age of forty and nearly 40,000 X ray examinations showed the percentage to be 5·7 per cent. Rankin and Brown estimated this at a similar figure. In my own series the incidence is 10·8 per cent. in 507 examinations of patients over the age of 35, but as I have pointed out elsewhere[2] this gives no true picture of the incidence among the public at large but is confined to that small group of patients in whom X ray examination is undertaken because they are complaining of symptoms referred to the large bowel.

I am, Sir, yours faithfully,

HAROLD C. EDWARDS.

Queen Anne-street, W., June 24th.

AGGLUTINATION OF VIRUS BODIES

To the Editor of THE LANCET

SIR,—In the interesting and important contribution by B. Schlesinger, A. G. Signy, and C. R. Amies to THE LANCET of May 18th concerning the presence of elementary bodies in acute rheumatism there is a sentence that in the interests of historical accuracy requires qualification. Before dealing with agglutination of these elementary bodies by the serum of the rheumatic patients, the writers proceed: "It has been already shown in a number of virus diseases that elementary bodies which on other grounds are regarded as the causal agents are specifically agglutinated by the corresponding antisera. This phenomenon was first described by Ledingham (1931) in the case of vaccinia and fowl-pox," &c. Now, Sir, agglutination of the elementary bodies of vaccinia by specific serum was known for a considerable time before 1931. Prof. Paschen has informed me that he demonstrated it to a local biological society at Hamburg so far back as 1911, and he has sent me an illustration showing his elementary bodies agglutinated in this way that is on a proof stamped with the date Dec. 31st, 1913. The article in question was prepared for a second edition of Kraus and Levaditi's valuable book on methods and technique in immunity investigations, and it is a great pity that owing to the war this article was never published. In 1920 however vol. ii. of the well-known text-book the "Handbuch der Pathogenen Protozooen" edited by v. Prowazek and Nöller was published, and on p. 936 there is a specific reference to this matter in an article by Rocha Lima and the statement is made that positive agglutination of the vaccinia elementary bodies had been obtained both by Belin, and by Paschen and Jacobstal. Yet another reference to the subject occurs in the most recent German work on small-pox and vaccination the "Handbuch der Pockenbekämpfung und Impfung" edited by Lenz and Gins, and published in 1927. On p. 848 in course of an article on the immunity relations between human and animal pock disease Sobernheim mentions that both macroscopic and microscopic agglutination of the elementary bodies of vaccinia by specific serum had been observed by Paschen.

There can be little doubt therefore, that in this matter of the specific agglutination of the elementary bodies of vaccinia a priority of many years belongs to Paschen. The statement made by Schlesinger, Signy, and Amies however would probably be quite correct if the qualification were added "in this country." The technique developed by Ledingham, notably his application of the high-speed centrifuge for the purpose of concentrating the filtered elementary bodies, and the patient observation of their agglutination under the microscope with adequate controls, has provided the groundwork of a method that is an important advance, and has already led to results of the greatest significance and promise as the published work shows including this latest contribution to the ætiology of acute rheumatism.

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[1] Brit. Med. Jour., 1934, ii., 120.

[2] THE LANCET, 1934, i., 169 and 221.

The *macroscopic* method, however, of observing the flocculation of a virus by specific serum has many advantages over the microscopic, and has the merit of having already proved its practical usefulness in the field for detecting cases of small-pox by the presence in them of variola virus during an epidemic of small-pox at Dundee in 1927. Since this seems to have been the first occasion on which cases of a virus infection were identified by specific flocculation of the particular virus infecting them, it is possible that the special reports (Nos. 143 and 156) to the Medical Research Council on this matter by Burgess, Tulloch, and Craigie may come to be regarded in the future as of historic importance. Craigie's analysis of the specific flocculation reaction for small-pox demonstrated that two factors are involved in it—namely, agglutination of the elementary bodies, and precipitation of their soluble products. During the past few years moreover in a series of able researches carried out in the Connaught Laboratories of Toronto University, Craigie has shown not only that the separated and washed elementary bodies of vaccinia excite the production of specific agglutinin and complement-fixing antibodies, but also that this elementary body antigen is complex and comprises two fractions, one of which is more resistant to heat than the other. He has shown further that from these same separated and washed elementary bodies a specific precipitable substance can be extracted.

All of this goes to indicate that in course of time the various viruses will be recognised not only by the specific agglutination of their morphological elements, but also by specific precipitation of their soluble contents. It may be added that some experiments on this matter with Seitz filtrates of the viruses of vaccinia and of Shope's fibroma during recent months have convinced me that a specific precipitin test is quite practicable for the purpose of identifying the presence of either of these viruses, and has many advantages.—I am, Sir, yours faithfully,

M. H. GORDON.

St. Bartholomew's Hospital, June 21st.

DEAF EDUCATION AND LEGISLATION

To the Editor of THE LANCET

SIR,—I feel that the reply of Sir Hilton Young to Dr. Addison's question in the House of Commons, as reported in your issue of June 15th, asks for serious criticism. Dr. Addison asked the Minister of Health whether he was prepared to introduce legislation giving to deaf and dumb persons similar benefits as well as facilities for training as were afforded to the blind under the Blind Persons Act. Sir Hilton Young replied "No, Sir, I am not satisfied that there is need for such legislation."

It is time that the public should know the truth. My work for the deaf during the past quarter of a century has shown me that the outlook for deaf education in this country is worse now than it has been for many years and that fresh legislation is an urgent need; an opinion with which, I venture to think, no disinterested worker for the welfare of the deaf can disagree. My old friend Dr. James Kerr in 1933 put the matter forcibly in an article in the *Medical Officer* (1933, i., 261), from which I make two important quotations. "The various results of Blind Persons Act, 1920," he says, "shows what could be done on behalf of the deaf, if their care was recognised as a social duty of the community. For the deaf, however, there is no special provision beyond rather insufficient educational arrangements for deaf children." Dr. Kerr makes the following important demand for fresh legislation: "A Deaf Persons Act is much overdue, both from the educational and social points of view . . . . Such a Bill ought to be non-contentious and agreed, as its general principles have been recognised in recent legislation."

Unfortunately, the Eichholz report, with its inability to reconcile its own figures, its contradictions and vagueness, has put back the cause of the deaf for at least a generation, since it forms a potent weapon in the hands of reactionaries who maintain that the present inadequate and obsolete system is all that can be desired. *Quis custodiet ipsos custodes?*

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Harley-street, W., June 24th.

CLEFT PALATE

To the Editor of THE LANCET

SIR,—Mr. Wardill's interesting paper in your last issue emphasises the importance of a good anatomical result in operations for cleft palate. There is, however, another side of the problem, well summarised in the statement that "in its last analysis the modifications and interruptions of the vocal sounds essential to enunciation are just as dependent upon muscular action as is the act of walking."[1] Children born with cleft palates are born with abnormal palatal muscles, and it is not unreasonable to assume that many of them also have abnormal innervation to these muscles, which delays or even prevents their efficient cerebral control. In any operative attack upon the palate the aim must be to place the musculature in the optimum position for functional activity, and operation should be followed by a course of training to enable the child to establish coördination. The palatopharyngeus and the superior constrictor muscle play a very important part in the mechanism of enunciation and speech, and if a child has efficient control of these muscles he may speak well in spite of a palate which appears to be shortened.

Pharyngoplasty, which was attempted even in pre-Listerian days, has been alternately used and discarded by surgeons the world over. It was brought into prominence by Rutenberg in 1876; he made a transverse incision in the pharynx and sutured it longitudinally. Botey in 1908 excised an ellipse from the posterior pharyngeal wall, and sutured the edges, while Sir Robert Woods in 1927 electrocoagulated the posterior pharyngeal wall. Mr. Wardill has modified and reintroduced Rutenberg's operation—evidently with some success—but I cannot help thinking that narrowing of the lumen of the nasopharynx is liable to interfere with the function of the palatopharyngeal sphincter.

Like Mr. Wardill, I am strongly in favour of early operation so that the repair can be carried out before faulty habits of diction have been formed. Most children, however, speak before they are two years old, and personally I agree with Veau and others that the operation should be done if possible at the tenth month of life.

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[1] Blair, V. P., and Brown, J. B.: Surg., Gyn., and Obst., 1934, lix., 309.

Should the palatopharyngeus be underdeveloped, the palate abnormally short, and the nasopharynx appear wide, the ultimate functional result will probably be poor. Many attempts have been made to overcome these deficiencies, and G. M. Dorrance has suggested a push-back type of operation for the purpose. Unfortunately, however, he leaves a large raw area on the nasal side of his flap which is thus liable to undergo cicatrisation and subsequent contracture. At the present time the greatest chances of success lie first with the freeing of the palatal attachments to the posterior edges of the palate bones, and particularly to the division of the hamular process round which the tendon of the tensor palati turns. This was advocated by Whitehead in 1868, but he made the mistake of dividing the muscle as well. Secondly, all raw surfaces should be epithelialised. Thirdly, a course of speech training should be instituted after the operation. This training may be left to be carried out by the mother, but her task will be made easier if she works in collaboration with a person skilled in the after-care of this type of case. I am, Sir, yours faithfully,

DAVID LEVI.

Harley-street, W., June 24th,

TREASURE TROVE

To the Editor of THE LANCET

SIR,—May I make a slight correction in your note on this subject in THE LANCET of June 8th (p. 1351)? The notice circulated to Chief Constables in 1925 has been superseded by one of 1931. By the new regulations no deduction is made from the payment of the full market value to the finder who honestly reports his find. I enclose a copy. The jury who found that the single guinea of 1745 picked up at Newbury was not treasure-trove were quite right. For a find to be treasure-trove there must be evidence or presumption that it was deliberately hidden; otherwise it is ordinary trove, and the finder has the right to it against all the world except the owner, if he can be traced.

I am, Sir, yours faithfully,

British Museum, W.C., June 19th. GEORGE HILL.

*** We are grateful for Sir George Hill's correction on a matter which deserves more publicity than a notice from the Home Office to chief constables can give. Possessors of the latest edition of Jervis on Coroners may note that the information which follows supersedes the statement on p. 270 of that admirable work.—ED. L.

REVISED REGULATIONS FOR TREASURE-TROVE

Objects of *gold or silver* (whether coin, plate or bullion) which have been *hidden* in the soil or in buildings, and of which the original *owner cannot be traced*, are Treasure-Trove, and by law the property of the Crown.* If, however, the finder of such objects reports the find promptly, and it is decided that it is Treasure-Trove and therefore the property of the Crown, he will receive its *full market value* if it is retained for the Crown or a museum. If it is not retained, he will receive back the objects themselves with full liberty to do what he likes with them; or, if he wishes it, the British Museum will sell them for him at the best price obtainable. The only way in which a finder can comply with the law and also obtain these advantages is by reporting the find promptly to the proper authority.

The proper authority is the Coroner for the District in which the find is made, for he is the authority who enquires "of treasure that is found" and "who were the finders." (Coroners Act, 1887, section 36.)

Anyone therefore who finds such objects should report the find to the Coroner, either direct, or through the local Police, or by writing to the Director, British Museum, London, W.C.1, who will communicate with the Coroner.

Coins and other ancient objects of copper, bronze or any metal other than gold or silver are *not* Treasure-Trove and finds need not be reported to Coroners. But the British Museum is glad to hear of such finds and, if they are reported to the Director, will in suitable cases arrange for purchase or sale.

Any further information may be obtained by applying to the Director, British Museum, London, W.C.1.

THE EFFECTS OF HOT CLIMATE

DR. D. H. K. LEE writes: May I draw your attention to an error which appeared in the rough proof of my address to the Royal Society of Tropical Medicine and Hygiene, and which has been repeated in an annotation in your issue of May 25th The critical level for serum chloride concentration in the production of "heat cramps" is 100 *mille-equivalents* per litre, and not 100 mg. as quoted. The former figure corresponds to 365 mg. per 100 c.cm. (a figure more familiar to British readers).

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* Unless (as in some rare cases) the "Franchise of Treasure-Trove" has been expressly granted to a subject, in so far as finds in the particular locality are concerned.

OBITUARY

JOHN JOSIAH DOUGLAS, M.D., F.R.C.P. Edin., D.P.H. Oxon.

Dr. John Josiah Douglas, who died at Upper Norwood on June 13th after a brief illness, had practised in the district for 40 years. Born in 1866, he received his medical training at the University of Edinburgh where he graduated as M.B., C.M. in 1889. He took the diploma of M.R.C.P. Edin. and proceeded to the M.D. degree in 1897, being elected five years afterwards F.R.C.P. He was house physician at the Royal Infirmary, Edinburgh, and at the Norfolk and Norwich Hospital, and worked also in the Cancer Research Laboratory of the Middlesex Hospital, especially in connexion with the study of blood in malignant disease. He entered practice at Upper Norwood in 1895 and during his long residence there was particularly interested in the work of the Norwood Cottage Hospital. He had been surgeon to the hospital and at the time of his death was the senior member of the honorary medical staff. The organisation and progress of this institution owed him a real debt and his death was caused by an accident connected with his duties there. He had wounded his wrist at an autopsy at the hospital, and when the rapidly fatal course of his illness led to an inquest, the verdict returned, on the medical evidence, was to the effect that he had died from an infection incurred while carrying out the autopsy.

CHARLES H. S. TAYLOR, M.D. Camb.

WE regret to announce the death, which occurred on Tuesday last, of Charles Henry Shinglewood Taylor, well-known at Cambridge alike for his services in watching over the physical training of athletes and for his great ability and wide sympathy as a medical adviser and counsellor to the undergraduate world. Taylor was born in 1882 in Leribe, Basutoland, the son of Dr. Shinglewood Taylor, and was educated at St. Andrew's College, Grahamstown, and Rugby, whence he proceeded to Gonville and Caius College, Cambridge. He did his clinical courses at St. Bartholomew's hospital and graduated

M.B., B.Chir. in 1910, having already secured honours in the Natural Sciences Tripos. While at Cambridge he made a great reputation as an oar. As stroke of the Caius boat and later as stroke of the university boat he was marked alike for his beautiful style and his unfailing courage. His first medical appointments were at St. George's hospital where he served both as house physician and house surgeon, while he also did special work in the orthopædic departments at St. Bartholomew's hospital and Great Ormond-street children's hospital. On the outbreak of war he obtained a commission in the Royal Naval Division and saw service in Italy and Gallipoli; later he received a commission in the Royal Air Force upon its institution, and here his professional skill and his remarkable ability for making friends and for winning the confidence of his juniors led to his early promotion to the rank of lieutenant-colonel.

After the war Taylor returned to Cambridge and succeeded to the practice of Dr. R. W. Michell, also a member of Caius College, who had been killed in the war. Michell had for many years been medical adviser to many of the university clubs, notably to the boat club, and Taylor now assumed the responsibility of examining the physical condition of all sorts of candidates for athletic honours. Thus to some extent his early prowess on the river dictated his future professional career, but his unusually attractive personal qualities no less than his well-equipped brain would have secured success in any walk of life. He was the friend and confidant of a long series of undergraduates, and he devoted to their service a life that for many years was a frail one, and that in its latest period was a gallant combat against death.

JOHN HALL MORTON, M.D. Dub.

THE death occurred on June 7th of Dr. John Hall Morton, medical officer and governor of Holloway prison. He was born in 1883 in Limerick and received his medical education at the University of Dublin, where he graduated as M.B., B.Ch. in 1907. He spent his valuable life in the prison service after a short period as assistant medical officer in the Warwick County Lunatic Asylum. He was first assistant medical officer at the Richmond and Portrane Asylums, Dublin, and was then for a time deputy governor and medical officer at Borstal. He then became governor and medical officer at Aylesbury prison and 14 years ago was appointed governor and medical officer at Holloway, during the tenure of which post he died. His last active work was to make a report in writing, by permission, for the information of the court during the Stoner and Rattenbury case, his state of health not allowing him to give personal evidence. Dr. Morton was a recognised authority on alcoholism, holding strong views as to the futility of short sentences where the victims came into collision with the law; as a result he desired to see the institution of colonies for the victims of alcohol where they could, in a healthy environment, become self-supporting. He contributed on these subjects to the *Journal of Mental Science* and the *Howard Journal*, and earned well his reputation for efficiency, especially in regard to the treatment of women prisoners, and his humane attitude towards his charges.

HOSPITALS ON MERSEYSIDE.—In 1934 Merseyside hospitals received £140,285 from employers and workers as a result of the penny-in-the-pound contributory fund.

THE RESIGNATIONS AT THE ITALIAN HOSPITAL

FOR some time past there has been disagreement between the committee of management of the Italian Hospital and the medical committee with regard to the method of appointing new members of the honorary staff and other matters. This disagreement has now culminated in the resignation of 14 members of the staff. We understand that the first point of difference concerned the appointment as assistant physician of an Italian national who was duly registered by the General Medical Council under the reciprocity agreement between Great Britain and Italy, but had not, in the opinion of the medical committee, any special qualification for the post, having taken a higher examination only in surgical pathology. Soon after his appointment the new assistant physician found that he could not do surgery under the terms of that appointment, and the committee of management accepted his resignation and appointed him assistant surgeon instead. More recently there has been a further cause of friction. The committee of management, it is alleged, criticised the professional conduct of one of the honorary surgeons without having at any time given him an opportunity of appearing before them to explain his reasons for a course of action which, in the view of the medical committee, in any case called for no criticism. The atmosphere was therefore already strained when the appointment was made, without consulting the medical committee and without advertisement, of five new honorary medical officers, none of whom possessed the qualifications for an honorary post as laid down in the rules of the hospital. Of these officers, four were Italians, one of whom has the Conjoint diploma, the others being registered by reciprocity. Three of these five officers were given the title of "temporary honorary," and two of them were called "assistant honoraries," all with the same privileges as full members of the honorary staff. The committee of management at the same time gave notice of their intention to make such alteration of the rules of the hospital as to permit the appointment of as many "temporary honorary" officers as was thought desirable. They also proposed to allow supernumerary members of the hospital staff—e.g., casualty officer, out-patient officer—to sit on the medical committee with full voting powers.

At this stage the good offices of the B.M.A. were enlisted, with results that appeared at first to be satisfactory. Following a visit by Dr. G. C. Anderson, the medical secretary of the Association, the committee of management sent a letter of apology to the surgeon whose conduct they had criticised and consented (having previously ignored all representations) to appoint a subcommittee to meet representatives of the medical committee for a discussion of the points at issue. The two subcommittees met and the medical committee were promised a considered reply to their representations. This was not, however, forthcoming, and on June 18th the committee of management was asked by the medical committee to give definite assurances on five specific points, or to accept the resignations of almost the whole of the honorary staff. The committee of management refused to give these assurances and the hospital has thus lost the services of a group of distinguished men.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Overcrowding and Housing Standards

IN the House of Lords on Monday, June 24th, the Housing Bill was considered in Committee. The Earl of ONSLOW was in the chair.

On Clause 3 (which concerns offences in relation to overcrowding),

Lord BALFOUR of BURLEIGH moved an amendment to ensure that in fixing the standard of overcrowding regard should be had to the provisions of Section 37 of the Act of 1930. He said that the standard set up in the Bill was a penal standard and a very low one. The amendment only gave effect to a declaration which the Minister in charge of the Bill in the House of Commons had made.

Viscount GAGE, Lord in Waiting, said that what the Minister had intended to convey was that where housing had to be provided by the local authority Section 37 of the Act of 1930 should apply. Although the standard in the Bill was not an ideal one it was not undesirable compared with what the Government were trying to remedy.

The Bishop of WINCHESTER said that the late Minister of Health made it perfectly clear that new houses which were to be built under the Overcrowding Bill would conform to a higher standard than the standard laid down. There was nothing in the Bill which made that clear.

The amendment was negatived by 40 votes to 17.

The Housing Bill was further considered in Committee in the House of Lords on Tuesday, June 25th.

On Clause 30 (which deals with Exchequer contributions towards the provision of flats on sites of high value),

The Earl of DUDLEY moved an amendment to provide that the Minister of Health should not approve flats unless each flat in a block exceeding three storeys in height was provided with a balcony. He said that medical officers of health were unanimous in the opinion that balconies were essential for the health of infant children. A mother who lived at the top of a big block of flats had not time to take her children out into the air and sunshine. He was told that the lack of fresh air and sunshine was a greater cause of rickets and other diseases in children than malnutrition.

Viscount HALIFAX, Secretary of State for War, said that everyone would be in agreement with the object of the amendment, but he asked Lord Dudley not to press it. To single out and give prominence to one desirable amenity and to include it along with the provision of bathrooms in the Bill would by implication tend to diminish the importance that might be attached to other amenities equally desirable.

Lord BALFOUR of BURLEIGH suggested that in future circulars the proposal for balconies should be commended by the Minister to local authorities as a very desirable feature.

Viscount HALIFAX promised to convey that suggestion to the Minister.

The amendment was withdrawn and the Bill passed through Committee.

In the House of Lords on Monday, June 24th, the University of Durham Bill passed through Committee without amendment and was reported to the House.

The Superannuation Bill (which amends the law with respect to the superannuation of civil servants) passed through Committee and was reported to the House. The Bill passed through the Report stage on June 25th and was read the third time.

Medical Services Among African Natives

In the House of Commons on Thursday, June 20th, a vote of £35,133 was considered in Committee of Supply for the salaries and expenses of the Dominions Office.

Mr. J. H. THOMAS, in introducing the vote, announced that the Government had under consideration at this moment a grant of £100,000 from the Colonial Development Fund which he hoped to use mainly for the development of medical services in the African Colonies and Protectorates. In addition a grant of £10,000 had been made by the mineowners of South Africa which would be used exclusively for medical purposes among the natives.

The debate on the vote was adjourned.

HOUSE OF COMMONS

WEDNESDAY, JUNE 19TH

New Motor Driving Test

Mr. PARKINSON asked the Minister of Transport the number of men and women that had been examined for the new driving test, and the number that had failed, giving separate figures for men and women.—Mr. HORE-BELISHA replied: Up to and including June 15th 50,712 persons have been examined, of whom 5036 failed to satisfy the examiners. From May 6th, since when separate records for men and women have been kept, to June 15th the figures are:—

Men examined 19,459, failed 1989
Women ,, 4542 ,, 730

THURSDAY, JUNE 20TH

Potato Lifter's Death in Jersey

Mr. THORNE asked the Minister of Labour if he could give the House any information in connexion with the death of a potato digger at St. Helier, who was sent from Torrington labour exchange, Devon; if he could state the cause of death; and whether he received from time to time reports in connexion with the housing and working conditions of workers who were engaged from British labour exchanges to dig potatoes in Jersey.—Mr. ERNEST BROWN replied: Mr. Mules applied and was engaged for work as a potato lifter in Jersey. On June 6th he had a sudden collapse while at work and was conveyed to hospital, where, I regret to say, he died. Death was due to syncope arising from duodenal trouble. Mr. Mules had previously been employed on this work and there was no medical evidence to suggest that he was unfit for it. In a reply to the last part of the question it is the case that officers of the Ministry are stationed in Jersey throughout the potato lifting season, who keep in touch with conditions and furnish weekly reports.

Medical Examination of Coal Workers

Mr. E. WILLIAMS asked the Minister of Labour whether employment in the Kent coalfield was subject to medical examination, and the number who had recently been rejected for this reason; and whether unemployment benefit would be prejudiced.—Mr. ERNEST BROWN replied: The answer to the first part of the question is "Yes." I understand that 14 applicants for employment have been rejected on medical grounds this year. Eligibility for unemployment benefit is determined, as the hon. Member is aware, by the independent statutory authorities, but I am not aware of any cases in which a claim has been disallowed in these circumstances.

Young Offenders and Imprisonment

Mr. LOVAT-FRASER asked the Home Secretary whether, in view of the widespread condemnation of the practice of sending young people to prison, he would promote legislation to prevent young people between the ages of 17 and 21 from being subjected to imprisonment.—Sir JOHN SIMON replied: I most fully appreciate the objections to sentencing young offenders to imprisonment if any possible alternative is open to the Court. But the decision when to use one of these alternatives, such as probation or Borstal training, must be a matter for the discretion of the Court, having regard in each individual case to the facts of the offence and the character of the offender. Legislation removing all discretion from the Courts would not, I fear, be practicable.

National Health Insurance: Medical Treatment of Young Persons

Mr. CLARKE asked the Minister of Health whether it was his intention to include any organised provision for the medical treatment of boys and girls between the ages of 14 and 16 years in the Vocational Guidance of the National Health and Contributory Pensions Bill, 1935, in view of the position being anomalous now that the age of entry to unemployment insurance had been lowered.—Sir KINGSLEY WOOD replied: I would refer my hon. friend to the statement which the Parliamentary Secretary to the Ministry made on this subject in the course of his speech on the Second Reading of the Bill.

National Health Insurance: Doctor's Remuneration

Mr. HICKS asked the Minister of Health the annual amount paid to national health insurance doctors for the last three years; the amount paid out by the approved societies to their members during the same period; and *the amount paid to the drug fund during the same period* in Great Britain and Northern Ireland.—Sir KINGSLEY WOOD replied: The following particulars relate to England and Wales. As regards Northern Ireland I have not the desired information, and as regards Scotland I would refer the hon. Member to the Secretary of State for Scotland. The amounts paid to insurance practitioners (A) from National Health Insurance funds, including payments for drugs in certain circumstances, during the years 1932, 1933, and 1934, and of the amounts paid to chemists (B) in respect of National Health Insurance prescriptions were as follow:—

(A)		(B)	
Year.	Amount. £	Year.	Amount. £
1932	6,875,014	1932	1,994,393
1933	6,898,822	1933	1,948,090
1934	6,995,255	1934	1,945,056

The capitation fees payable to insurance practitioners and the dispensing fees payable to chemists were subject as from Oct. 1st, 1931, to June 30th, 1934, to an economy deduction of 10 per cent. and as from July 1st, 1934, to the end of the period covered by this statement to an economy deduction of 5 per cent.

The amounts paid in benefits (other than medical benefit) by approved societies during the same years were approximately as follow:—

Year.	Amount. £
1932	19,385,000
1933	19,240,000
1934	18,083,000

Housing Grants

Mr. DOBBIE asked the Minister of Health if any grants had been made under the Housing (Financial Provisions) Act, 1924, towards housing schemes not completed by June 30th, 1934; what they were; and what were the circumstances under which the grant had been made.—Sir KINGSLEY WOOD replied: In no case has a grant been made to a local authority in the circumstances described. In one case grant has been paid to a voluntary housing association, the Westminster Housing Trust, in respect of a large block of flats which could not be completed by June 30th, 1934. In this case there were exceptional reasons for the payment of grant for which special Treasury sanction was obtained. In particular, construction of the flats was begun on the strength of a promise of grant given in good faith by the London County Council before the abolition of subsidy was announced.

Burning Pit Heaps and Public Health

Mr. TINKER asked the Minister of Health if he was aware of the increasing number of burning pit-heaps in Lancashire and Yorkshire; and, in view of the danger to health that they caused, if he would have an investigation made by his department to find out the number the area covered by them.—Sir KINGSLEY WOOD rep I am aware that there are burning pit-heaps in Lanca and Yorkshire, but not that their number is incr An investigation was made last year and it was estim that there were 45 such heaps in Lancashire and Yorkshire.

Medical Officer's Duties in Scottish Priso

Mr. LEONARD asked the Secretary of State for Scot the terms of the prison rule, No. 225, governing the of the medical officer and the extent to which that was complied with in Barlinnie prison.—Sir GODF COLLINS replied: The rule to which the hon. Mem refers reads as follows: "The medical officer shall every prisoner at least once a week, so as to ascert general state of health, physical and mental, and wh he is clean in his person, and free from disease, and i clothing and bedding are sufficient, and shall record result of his inspection in his journal." The me officer sees every prisoner once a week and makes inq as to his condition. If the state or appearance of prisoner renders any action necessary, or if the pris makes any request or complaint which inquiry pr to be justified, action is duly taken. The medical o records the result of his inspections in his journal.

Provision of Pit-head Baths

Sir CHARLES EDWARDS asked the Secretary for M if he was aware that the workmen of the Ma colliery, Monmouthshire, had been agitating f head baths for the last five or six years; that a b was taken at that time and showed an overwh majority in favour; and that negotiatons were sup to have been going on between the colliery company the railway company, who owned the site, for the wh of that time, so far without result; and if he wo endeavour to bring these negotiations to an end so *the work might proceed.—Captain CROOKSHANK repli* I am aware of all the circumstances in this case, an greatly deplore the delay which has occurred in build the baths. There have been exceptional difficulties, in regard to the choice of site, part of which is the prop of the railway company, and as to the conditions of acquisition. The hon. Member is no doubt aware t the conduct of the negotiations is a matter for the colli company concerned, and not one in which I have a authority to interfere. My predecessor did all he could expedite a satisfactory settlement and I shall do the sa

Silence Zones

Mr. RANKIN asked the Minister of Transport whet any local authority had yet experimented with enforcement of silence zones for the whole 24 hours of day; and whether he was prepared to receive sym thetically applications to carry out such experiments. Mr. HORE-BELISHA replied: The answer to the first pa of the question is in the negative, and to the second pa in the affirmative.

MONDAY, JUNE 24TH

Hospital Treatment of Infectious Diseases in Sunderland

Mr. STOREY asked the Minister of Health whether had considered correspondence submitted to him by Sunderland Children's Hospital with reference to t refusal of the health committee of Sunderland Corporati to remove to the borough hospital for infectious diseas two children whose homes were outside the borough, a who were found to be suffering from cerebro-spinal men gitis after a short period of observation in the hospit until such time as the hospital authorities had ma arrangements with the local authority in the area which the children resided for the payment of the co of their maintenance and treatment; and what steps proposed to take to ensure that infectious cases were future removed promptly from th hospital the infectious diseases hospital. Parliamentary Secretary to the replied: My right hon. friend has received the corr ndence referred to and he will communicate with the nderland town council in the matter.

New Poisons Regulations

Captain **Peter Macdonald** asked the Home Secretary ether he had yet considered the report of the Poisons ard with regard to the new poisons regulations and s; whether he proposed to make any amendments hereto; and, if not, by what date it was proposed to the order for the enforcement of these proposals ore Parliament.—Captain **Wallace**, Under-Secretary the Home Office, replied: Notice of my right hon. nd's intention to confirm the Poisons List, prepared l submitted to him by the Poisons Board, and to make es under Section 23 of the Pharmacy and Poisons t, 1933, was published on the 18th of this month. I nnot say what amendments, if any, will be made in the ft list and rules until my right hon. friend has con- ered such representations as he may receive in regard them. The rules and the order confirming the Poisons st will, as required by the Act, be laid before Parliament soon as they are made.

Mental Hospitals

Sir **William Jenkins** asked the Minister of Health the mber of patients in mental hospitals in England and ales for 1926, 1930, 1933, and 1934; and the average st per head per week.—Sir **Kingsley Wood** replied: he available figures relating to county and borough ental hospitals are as follow:—

Jan. 1st—	Number of patients.	Average weekly cost per patient, excluding capital expenditure defrayed out of revenue (year ended March 31st).
1926	107,836	—*
1930	117,249	—*
1933	122,629	25*s.* 11·9*d.* (69 hospitals).
1934	123,977	25*s.* 7·1*d.*

* The figures for these years are not given as the form of sting Returns was revised as from April 1st, 1932; for the st year of its application (1932–33) only 69 of the 99 hospitals rnished such revised Returns.

TUESDAY, JUNE 25TH

Malaria in Ceylon

Mr. **Rankin** asked the Secretary of State for the olonies whether he was now in a position to make any tatement with regard to the steps which had been taken o control the exceptional outbreak of malaria in Ceylon; and whether he was satisfied that the steps now being taken were likely to put an end to this outbreak.—Mr. M. **MacDonald** replied: The steps which have been taken were detailed in oral replies given by my predecessor to questions on March 27th and June 5th. Since the latter date the Governor has reported that the State Council of Ceylon have recently voted a further sum of Rs. 2,000,000 for the relief of distress due to sickness and shortage of food arising from the malaria epidemic and the failure of the harvest. The new drug atebrin musonate is undergoing trials in the larger hospitals and certain groups of villages in the epidemic area. I am satisfied that the Government of Ceylon are taking all reasonable measures for dealing with the outbreak, and that they will give the fullest consideration to any further recommendations which may be made by the special officer who is engaged on an expert investigation of the situation.

Supply of Fresh Milk to Home Troops

Mr. **Patrick** asked the Financial Secretary to the War Office the approximate proportion of fresh and preserved milk, respectively, consumed by troops stationed in the United Kingdom; and whether, in the interest of the health of the troops and that of home milk producers, he would consider the possibility of taking steps to increase the proportion of fresh milk consumed.—Mr. **Douglas Hacking** replied: Milk is purchased for the troops regimentally from the Navy, Army, and Air Force institutes out of a daily cash allowance, and it is within the discretion of units whether they purchase fresh or preserved milk, both of which are obtainable from the institutes. Definite information is not available as to the proportions of fresh and preserved milk consumed, but I can assure my hon. friend that the importance of using fresh milk is impressed both on the messing officers of units and on the soldiers' families.

Miners' Phthisis in Basutoland

Mr. **Paling** asked the Secretary of State for Dominion Affairs how many Basutos were employed in the mines of the neighbouring territories, and how many had been certified, after a period of work in the mines, as suffering from miners' phthisis.—Lord **Stanley**, Under-Secretary of State for the Dominions, replied: According to the recent report of the Basutoland Commission the average number of Basutos employed in the Witwatersrand Gold Mines during 1931–33 was 29,374. I have no information as to the number of Basutos who are suffering from miners' phthisis contracted as a result of such employment, but the total number of cases of pulmonary tuberculosis reported in Basutoland during the period in question averaged 323 a year.

MEDICAL NEWS

University of Cambridge

At recent examinations the following candidates atisfied the examiners:—

THIRD EXAMINATION FOR M.B. AND B.CHIR.

Part I. (Surgery, Midwifery, and Gynæcology).—R. A. Andrews, M. Ball, S. L. Bhatia, G. B. Barbour, K. O. Black, A. C. Blandy, A. W. Bone, R. E. Bonham-Carter, A. S. Bookless, A. F. Bryson, I. B. Bunting, H. A. Burt, G. R. Debenham, C. A. Dowding, D. G. Evans, R. D. Ewing, I. C. Fletcher, R. T. Gabb, C. J. Gordon, C. N. Gosse, G. N. St. J. Hallett, A. E. M. Hartley, W. S. Haynes, H. D. Johnson, A. R. Kelsall, J. R. Kerr, J. W. acey, W. A. Law, S. A. H. Lesser, J. F. Lown, K. G. F. Mackenzie, H. S. Mellows, C. R. Morison, W. G. Murray-Browne, K. O. G. Norman, D. M. Norman-Jones, G. W. Palmer, A. H. Pirie, R. R. Prytherch, C. N. Pulvertaft, C. G. Rob, V. C. Robinson, P. G. Scott, C. W. A. Searle, J. A. Seymour-Jones, R. Solley, A. F. Stallard, R. H. Taylor, F. B. Thomas, G. C. Tooth, W. Warren, H. S. Wigfield, B. L. Williams, A. Winder, and C. H. F. Wood.

Part II. (Physic, Pathology, and Pharmacology).—A. W. Abramson, D. G. Allen, H. F. Anderson, T. G. Armstrong, E. Bevan, G. Blackburn, W. G. Brander, S. G. Brook, J. W. D. Ball, N. A. Buxton, A. G. Carr, A. E. Cohen, J. S. Cookson, J. F. Coombs, T. M. Daniel, R. B. Davis, G. R. Debenham, W. J. B. de Gruchy, J. F. Dow, E. P. H. Drake, T. S. R. Fisher, L. C. Fletcher, R. T. Gabb, L. R. Gardner, C. J. Gordon, E. M. Griffin, N. J. P. Hewlings, E. D. Hoare, R. D. Holloway, M. Hynes, R. F. Jarrett, A. R. Kelsall, D. P. King, W. A. Law, H. T. Laycock, N. C. Lendon, P. H. Lenton, L. N. G. Lytton, E. C. Manson-Bahr, F. R. R. Martin, T. D. F. Money, D. M. Norman-Jones, J. F. Paterson, J. H. Patterson, E. E. Pochin, G. R. Rawlings, J. S. Richardson, M. C. A. Robson, R. E. Rodgers, J. R. Rose, C. W. A. Searle, H. S. Sharp, A. H. M. Siddons, F. A. Simmonds, D. A. Smith, J. H. Stothert, O. K. Tubby, W. F. Walton, J. G. Webb, H. S. Wigfield, and H. M. Wilson.

University of Bristol

At recent examinations the following candidates satisfied the examiners:—

M.D.

J. F. Coates (with distinction).

M.B., CH.B.

Section II.—Kathleen G. Brimelow (with second-class honours), and S. D. Loxton (with distinction in surgery).

B.D.S.

J. W. E. Snawdon (with second-class honours).

University of Glasgow

On June 19th the hon. degree of LL.D was conferred on Dr. Walter King Hunter, emeritus professor of the Muirhead chair of medicine in the University, Dr. John Martin Munrow Kerr, emeritus professor, of the regius chair of midwifery in the University; and Dame Louise McIlroy, late professor of obstetrics and gynæcology in the University of London.

The following degrees were also conferred:—

M.D.—D. F. Anderson, Eleanor Badenoch, Thomas Nicol, and J. B. Rennie (with honours); William Gilmour, and Jessie W. Ogilvie (with high commendation).

M.Ch.—T. J. B. A. MacGowan (with high commendation).

Society of Apothecaries of London

At recent examinations the following candidates passed in the undermentioned subjects :—

Surgery.—N. F. Bishay, Univ. of Birmingham ; E. M. Craggs, Middlesex Hosp. ; C. R. Hopper, Univ. of Liverpool ; J. B. Mair, Univ. of Glasgow ; J. E. T. Munn, St. Mary's Hosp. ; S. Roberts, Univ. of Bristol ; and J. S. Scott and D. Walton, Univ. of Manchester.

Medicine.—A. Aspinall, Univ. of Manchester ; N. A. Bicchieri, St. George's Hosp. ; S. E. Osborne, Guy's Hosp. ; and S. Roberts, Univ. of Bristol.

Forensic Medicine.—A. Aspinall, Univ. of Manchester ; G. G. O. Evans, Charing Cross Hosp. ; S. E. Osborne, Guy's Hosp. ; S. Roberts, Univ. of Bristol ; G. W. Van Mentz, London Hosp. ; and H. M. R. Waddell, Univ. of Manchester and Charing Cross Hosp.

Midwifery.—E. E. Le Feuvre, St. Mary's Hosp. ; and J. B. Mair, Univ. of Glasgow.

The following candidates, having [illegible] tion, have been granted the diploma [illegible] to practise medicine, surgery, and [illegible] J. S. Scott, H. M. R. Waddell, and D. Walton.

University of St. Andrews

Dr. Robert C. Garry, of the Rowett Research Institute, Aberdeen, has been appointed to the chair of physiology at University College, Dundee.

Dr. Garry graduated in medicine at Glasgow in 1922, winning the Brunton memorial prize. After a year as resident at the Western Infirmary he took up work at the Institute of Physiology, later becoming assistant to the late Prof. Noel Paton. In 1925 he was appointed lecturer and Muirhead demonstrator in experimental physiology under Prof. E. P. Cathcart. In the period from 1926 to 1929 he studied at Freiburg, at University College, London, and at Leeds, after which he returned to Glasgow as lecturer and examiner in physiology. In 1933 he received the degree of D.Sc., and in February of last year joined the staff of the Rowett Research Institute. Dr. Garry's research work has been chiefly concerned with nutrition, especially in relation to gastro-intestinal function.

Prof. David Waterston, of the chair of anatomy, has been reappointed representative of the university on the General Medical Council for a period of five years.

Post-graduate Course in Freiburg

A special course is being held from July 1st to 23rd by the medical faculty of the University of Freiburg. The lecturers will include Prof. L. Aschoff, Prof. P. Uhlenhuth, Prof. C. Noeggerath, and Prof. K. Schilling. Further information may be had from the Prof. Noeggerath at the Kinderklinik, Mathildenstr, 1, Freiburg-in-Breisgau, Germany.

Wilson Hospital, Mitcham

On June 22nd Dr. Alfred Cox opened extensions at this hospital comprising a new theatre and out-patient block and new wards. A total of 72 beds are now available. Passages from Dr. Cox's address appear on p. 1521.

Treloar Cripples' Hospital and College

At the founders' day celebrations of the Lord Mayor Treloar Cripples' Hospital and College, to be held at Alton on Saturday next, July 6th, Lord Reading will lay the foundation stone of the Silver Jubilee treatment centre.

The Patient's Outlook

Addressing the students of St. Thomas's Hospital, London, when he distributed the prizes last Tuesday, Lord Wakefield referred to what he called a radical change in the relations between the doctor and his patients. "In my young days," he said, "the family doctor was somewhat prone to pronounce premature sentence of death. It was no uncommon thing to hear that so-and-so had been told that he had six months to live. This was, I suppose, part of the stern Victorian rigour of those days. We liked to face facts, but sometimes one can pay too high a price for this privilege. In many instances the patient outlived his sentence, to the satisfaction and delight of everyone—even including his doctor. There were other cases where the patient obediently faded away." Nowadays, on the other hand, it was usual to approach the subject of disease in a spirit of determined optimism ; the will to live was actively encouraged. By its discoveries, and by its own attitude to the tasks which face it, the medical profession had materially contributed to this great improvement, and in Lord Wakefield's opinion it was one of the triumphs of our time that medical science and psychology had been brought into fruitful contact.

Epsom College

The eighty-second annual general meeting of th
governors of Epsom College was held at 49, Bedford-squar
W.C., on Friday, June 21st. Lord Leverhulme, th
president of the College, was in the chair. The governo
received the names of the foundationers and pensione
elected by the conjoint committee, as well as details
the amounts granted to some of the unsuccessful applican
from the new Sherman Bigg Fund.

In presenting the report of the council for the pa
year the president paid a tribute to the prudence, for
sight, and efficiency of the retiring treasurer, Sir Willia
Hale-White, who during the ten years of his office had do
much for the College. In this relatively short space of th
the College had extended its benefits, got rid of its deb
enlarged and modernised its buildings, and increased
endowed fund. Turning to the work of the other memb
of the College council Lord Leverhulme spoke of the val
of the services so generously given by the chairman
the council, Sir Raymond Crawfurd, Dr. Henry Robins
chairman of the conjoint committee, Dr. Harold Spit
chairman of the executive committee, Dr. John Fawce
Mr. George E. Waugh, and Dr. Arnold Lyndon, dep
chairman of the executive committee for finance, sch
and selection matters.

On the motion of Sir William Hale-White, Dr. Jo
Fawcett was unanimously elected treasurer of
College in his place. The report was unanimously adop
and the proceedings ended with the passing of a wa
vote of thanks to Lord Leverhulme for presiding at
meeting. A list of the successful candidates appears
our advertisement columns (p. 51).

Middlesbrough Hospitals

A further stage in the development of Middlesbroug
public hospitals was reached on Saturday last when
Kingsley Wood, the Minister of Health, opened extensi
of the male surgical and tuberculosis wards at Holg
Municipal Hospital and a new cubicle block at West La
Hospital. At West Lane, where a new nurses' ho
was opened last October, every type of infectious dise
is treated except small-pox, and the new buildings inclu
an 8-bed puerperal fever block which is self-contain
The hospital can now accommodate 200 patients with
staff of 40. The Holgate Municipal Hospital was original
a poor-law institution, and with accommodation for 2
patients was transferred to the town council under t
Local Government Act of 1930. Dr. C. V. Dingle
medical officer of health for Middlesbrough, Dr. W. Brita
Jones medical superintendent of the Municipal Hospit
Dr. F. J. Henry tuberculosis officer, and Dr. G. B. Murr
deputy medical officer of health and resident medic
officer at West Lane.

Appointments

Baxter, C. B., O.B.E., M.B., F.R.C.S. Edin., has been appointe Surgeon to t[illegible]ospital, Reading.

Hooper, A. N., [illegible] Eng., Assistant Surgeon to the Royal [illegible]

Scott, Gordon, M.R.C.S., Resident Medical Officer, City of London Maternity Hospital.

Soden, G. E., M.R.C.S., Assistant Resident Medical Officer, City of London Maternity Hospital.

Royal Free Hospital.—The following appointments are announced :

McDowall, A., M.B. Edin., F.R.C.S. Eng., First House Surgeon ;

Sainsbury, H., M.R.C.S. Eng., Resident Anæsthetist ; and

Cobbe, C. J., M.R.C.S. Eng., Casualty Officer.

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hospital.—H.S. £150.

Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.

Birmingham Maternity Hospital.—Res. M.O. and Registrar. £200.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. At rate of £120.

Brighton, Sussex Eye Hospital.—Hon. Clin. Asst.

[illegible] Cas. H.S. Also Sen. Obstet. H.S. [illegible] o H.P.'s and H.S.'s to Spec. Depts.

[illegible] Field Library [illegible] Medical [illegible]